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Leleupidiini from the Oriental Region.
2. The genus *Gunvorita* Landin
(Insecta, Coleoptera, Carabidae, Zuphiinae)

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Leleupidiini from the Oriental Region. 2. The genus *Gunvorita* Landin (Insecta, Coleoptera, Carabidae, Zuphiinae). - The genus *Gunvorita* Landin is revised and the following 13 new species from Nepal and northeastern India are described and illustrated: *Gunvorita angusticeps*, *G. besucheti*, *G. depressipennis*, *G. hamifera*, *G. inermis*, *G. laeviceps*, *G. minor*, *G. nepalensis*, *G. ovaliceps*, *G. punctipennis*, *G. schawalleri*, *G. smetanai*, and *G. uncinata*. The male genitalia of *G. indica* Darlington are described and figured. A key to all 16 known species is provided.

Scenario's of the possible evolution and biogeographic history of the Oriental-Australian Leleupidiini are presented, even though the phylogenetic relations of and within the three genera occurring in the Oriental region are not yet settled. Striking gaps in distribution of Leleupidiini in the Oriental region and some phylogenetic evidence indicate at least two, or even more probably, three independent colonization events of Leleupidiini in southern Asia: namely the genus *Paraleleupidia* to southern India, the ancestral stock of *Colasidia* to Malaysia, and the ancestral stock of *Gunvorita* to the pre-Himalayan area of Nepal to northeastern India. But another scenario is also conceivable with colonization of the ancestral stock of *Colasidia* **and** *Gunvorita* to Malaysia and with later spreading of *Colasidia* to the southeast and *Gunvorita* to the northwest.

The immigration is believed to have occurred by drifting on the Indian plate (*Paraleleupidia*) and on terranes of the so-called "Sundaland" (*Colasidia* and *Gunvorita*). Consequently, the Oriental-Australian Leleupidiini are derived from ancestors that were formerly distributed in the part of Gondwanaland situated east to Africa. Therefore, Leleupidiini most probably are of pre-Cretacious age, and they are a further example of rather recent immigration of an old Gondwanan element into the Australian region from the north.

Key-words: Coleoptera - Carabidae - Zuphiinae - Leleupidiini - *Gunvorita* - Taxonomy - Oriental Region - Biogeography.

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INTRODUCTION

As a second part of a general review of the Oriental Leleupidiini the genus *Gunvorita* is treated. Specimens of this genus, like Oriental Leleupidiini in general, until now were very rare in collections, though became increasingly numerous in the last few years, which is certainly due to more intense collecting and to specialized sampling methods. However, Leleupidiini are yet unrecorded from large parts of the Oriental region. Apparently, they either concentrate in few regions, or have been only sampled in these areas, because other regions have not been adequately worked until now.

The history of the discovery of the Oriental Leleupidiini was briefly recorded in the first part of this review (BAEHR 1997b). Including the species of the genus *Colasidia* described in that paper and the new species of *Gunvorita* described in the present paper 49 species of Leleupidiini are now known from the Oriental and Australian Regions.

Most Oriental-Australian species have been included in the genus *Colasidia* Basilewsky, but except for three species from South India that were arranged within the genus *Paraleleupidia* Basilewsky, subgenus *Megaleleupidia* Mateu, so far only three species were described as belonging to the genus *Gunvorita* Landin. Although the present classification of Oriental Leleupidiini is not really satisfactory, I think this generic concept should be maintained for the present. Hence those species are included in the genus *Gunvorita* that have a markedly elongate head with generally small eyes, a rather elongate, highly convex prothorax with inconspicuous lateral margins, possess rather distinct circular impressions medially of the eyes, though lack - at least on head and prothorax - the rather coarse puncturation present in the genus *Colasidia*.

The crotchet on the lower surface of the apex of the aedeagus is highly characteristic in many species of *Gunvorita*, though a group of species lacks this character without showing striking differences in any characters of the external morphology. Therefore, characteristics of the aedeagus at present are not as useful for characterization of the genus *Gunvorita* as one might believe.

There is some reason to believe that male genitalic characters generally can be used for better recognition of the genera, but at present male genitalia were known of little more than half of the species of *Colasidia*, and of no species at all of the genus *Paraleleupidia*. Moreover, the known aedeagi of *Colasidia* are very diverse and thus far do not give a clear picture. Hence, for the present, in *Colasidia* as well, male genitalia have been only used for distinction of species.

By courtesy of Dr I. Löbl (Muséum d'histoire naturelle, Genève - MHNG) I received samples of the genus *Gunvorita* (and other Leleupidiini - see BAEHR 1997b) for identification that had been collected during the last 25 years by staff of the museum in different countries of southern Asia. When the present paper was almost ready for being printed, I received a further sample of specimens of the genus *Gunvorita* by courtesy of Dr W. Schawaller (Staatliches Museum für Naturkunde - SMNS) that were collected by Prof. J. Martens during his frequent expeditions to

Nepal, but also partly in the course of J. Martens' joint trips together with W. Schawaller. I decided to include this sample in the paper because it contains altogether 7 *Gunvorita* species of which 5 are new again. Hence, this paper covers 13 new species, and the three species known hitherto are reviewed briefly and in parts redescribed.

Altogether, 76 specimens of *Gunvorita* were examined for this paper.

MEASUREMENTS

Measurements have been made under a stereo microscope using an ocular micrometer. Length has been measured from tip of labrum to apex of elytra, therefore, measurements may slightly differ from those of other authors. Length of head is measured from anterior border of clypeus to anterior border of "neck". The ratio length of orbit/length of eye is likewise measured to anterior border of "neck".

CHARACTERS

Best characters for differentiation of the species of the genus *Gunvorita* are in the structure of the male aedeagus that is available in all species of this genus. Fairly useful characters are also provided by shape of head, pronotum, and elytra (expressed in a number of measurements and ratios), size of eyes and of appendages of head, degree and shape of puncturation of upper surface, and pilosity. In other respects the species are rather similar.

DEPOSITION OF TYPES

The holotypes of the new species are deposited at the Muséum d'histoire naturelle, Genève (MHNG) and at Staatliches Museum für Naturkunde, Stuttgart (SMNH), some paratypes are deposited in the working collection of the author (CBM) at the Zoologische Staatssammlung, München. The types of the three yet described species are in Naturhistoriska Riksmuseet, Stockholm (NHRS), The Natural History Museum, London (BMNH), and Forschungsinstitut und Naturmuseum Senckenberg, Frankfurt/M. (SMF).

Genus **Gunvorita** Landin

Gunvorita Landin, 1955: 467, fig. 90; DARLINGTON 1968: 208, fig. 1; MATEU 1981: 721, figs 4, 7; PERRAULT 1982: 76; CASALE 1985: 41, figs 1, 2; BAEHR 1988: 115; BAEHR 1990: 16; BAEHR 1991: 194.

Type species: *Gunvorita elegans* Landin, 1955

In this genus species with the following characteristics are combined: head always posteriorly somewhat widened, shape of head either pentagonal or more or less triagonal; eyes small; clypeal suture with a pair of deep grooves; frons with a pair of circular or horseshoe-shaped grooves; pronotum narrow and dorsally convex, with inconspicuous lateral margin; elytra depressed, posteriorly conspiuously widened, markedly triangular; puncturation on head and pronotum fine, on elytra fine to moderately coarse; pilosity elongate, hirsute, rather dense; male aedeagus almost always rather elongate, internal sac usually with two large sclerotized areas furnished with very elongate sclerotized teeth; female stylomere 2 always elongate, little curved, with elongate, acute apex, two elongate ventral ensiform setae, one elongate dorsal ensiform seta, a well developed nematiform seta, and stylomere 2 with 1-2 well visible nematiform seta(e) at median rim.

It is yet unsettled, whether the combination of these character states is sufficient to distinguish *Gunvorita* from Oriental *Colasidia* or even from African *Leleupidia*. In certain of these character states species of *Gunvorita* remember (supposedly) primitive species of *Colasidia* from Malaysia (see Baehr 1997 b).

Although the species are rather similar in external morphology, the aedeagi, in particular their apices, are highly characteristic in all species. Hence examination of male genitalia is indispensible, but species distinction by use of male genitalia is reasonably easy.

Key to the species of the genus *Gunvorita* Landin

Because some of the published figures of the yet described species are of great value for identification, though are not included in the present paper, in the key the numbers of the respective figures have been added under the following chiffres: **L55**: Landin 1955; **D68**: Darlington 1968; **M81**: Mateu 1981; **C85**: Casale 1985. It should be mentioned, however, that the figure of the aedeagus ascribed to *G. indica* Darlington by Mateu (1981, fig. 8) actually does not show the aedeagus of this species.

Identification of females may be difficult, unless they are associated with males. Although many species are very similar in certain external characters, I give an additional key using only external characters and ratios that may be useful for identification of females. Nevertheless, whenever females can be associated with males ♂ genitalia should be examined.

1.	♂♂	2
-	♀♀	18
2.	Apex of aedeagus with crotchet at lower side, doubtful species under both couplets (**M81** fig. 7; **C85** fig. 2; figs 1-9)	3
-	Apex of aedeagus without crotchet at lower side (figs 10-14)	13
3.	Head posteriorly markedly widened, rather triagonal (**L55** fig. 90; **M81** fig. 4; **C85** fig. 1; figs 37-40) **and** smaller species, length <4.5 mm **and** apical third of aedeagus distinctly bent up (**M81** fig. 7; C85 fig. 2; figs 1, 2)	4
-	Head posteriorly widely rounded off (Figs 41-47); usually larger species, length mostly >4.5 mm; apical third of aedeagus not distinctly bent up (Figs 3-9); if in doubt of the latter, species > 5 mm long	7

4. Eyes smaller in comparison to orbits (**C85** fig. 1; fig. 38); aedeagus with remarkably slender apical part, apex semicircular, with minute denticle on lower side (**C85** fig. 2). Eastern Nepal . . . . *martensi* Casale

- Eyes larger in comparison to orbits (**L55** fig. 90; figs 37, 39, 40); aedeagus with less slender apical part, apex not semicircular, with distinct crotchet (**M81** fig. 7; figs 1, 2) 5

5. Head markedly widened posteriorly, strongly triagonal (Fig. 40); lower surface of aedeagus with characteristic edge in middle, internal sac with short sclerotized area (Fig. 2). Northeastern India . . . . *inermis* sp. n.

- Head less widened posteriorly, less triagonal (**M81** fig. 4; figs 37, 39); lower surface of aedeagus without edge in middle, internal sac with elongate sclerotized area (**M81** fig. 7; fig. 1) 6

6. Aedeagus elongate, apex more delicate, apical third suddenly turned upwards, upper margin of apex not markedly upturned (Fig. 1); puncturation of head very fine and sparse. Northeastern India . . . . . *laeviceps* sp. n.

- Aedeagus shorter, apex shorter, stouter, less distinctly turned upwards, upper margin of apex distinctly upturned (**M81** fig. 7); puncturation of head coarser and denser. Eastern Nepal, Sikkim, northeastern India . . . . *elegans* Landin

7. Crotchet situated immediately at apex of aedeagus (figs 3-7); eyes slightly smaller, orbit >3.5 x as long as eye (Figs 41-45) 8

- Crotchet considerably removed from apex of aedeagus (Figs 8, 9); eyes slightly larger, orbit <3.5 x as long as eye (Figs 46, 47) 12

8. Aedeagus markedly short and stout, with very elongate crotchet (Fig. 7); size small, length <4.3 mm; for further discrimination of ♀♀ from ♀♀ of *hamifera* sp. n.: eyes smaller, orbit >3.75 x as long as eye (Fig. 45) **and** elytra slightly narrower, ratio l/w <1.96 (Fig. 29). Eastern Nepal . . . . *schawalleri* sp. n.

- Aedeagus longer and narrower, with shorter crotchet (Figs 3-6); size larger, usually >4.5 mm, except for small specimens of *hamifera* sp. n.; for further discrimination of ♀♀ of *hamifera* sp. n. from ♀♀ of *schawalleri* sp. n.: length >4.3 mm and eyes larger, orbit <3.75 x as long as eye (fig. 44) **and** elytra slightly wider, ratio l/w >1.96 (Fig. 28) 9

9. Head elongate, posteriorly markedly oval-shaped, ratio l/w >1.6 (Figs 41, 42); apex of aedeagus somewhat upturned (Figs 3, 4). Northeastern India . . . 10

- Head shorter, posteriorly shortly rounded, ratio l/w <1.6 (Figs 43, 44); apex of aedeagus barely upturned (Figs 5, 6). Nepal 11

10. Larger species, length 5.65 mm; head longer and narrower, ratio l/w 1.78 (Fig. 41); prothoraxwider, ratio l/w 1.23 (Fig. 57); aedeagus longer and more delicate (Fig. 3) . . . . *indica* Darlington

- Smaller species, length 5.05 mm; head shorter and wider, ratio l/w 1.61 (Fig. 42); prothorax narrower, ratio l/w 1.31 (Fig. 58); aedeagus shorter and stouter (Fig. 4) . . . . *ovaliceps* sp. n.

11. Head longer and narrower with smaller eyes, ratio l/w of head 1.51-1.60 (Fig. 43); elytra shorter, ratio l/w 1.38-1.44, wider in relation to prothorax (Fig. 27); aedeagus with shorter crotchet and with one elongate, coiled, denticulate sclerite (Fig. 5). Central Nepal .... *nepalensis* sp. n.

- Head shorter and wider with larger eyes, ratio l/w of head 1.42-1.47 (Fig. 44); elytra longer, ratio l/w 1.53-1.55, narrower in relation to prothorax (Fig. 28); aedeagus with longer crotchet and with two narrow, denticulate sclerites (Fig. 6). Eastern Nepal. .... *hamifera* sp. n.

12. Larger species, length c. 5 mm; prothorax longer and narrower, ratio l/w 1.21-1.27 (Fig. 62); elytra longer, ratio l/w 1.55-1.60, >2.05 x as wide as prothorax (Fig. 30); apex of aedeagus remarkably curved up, upturned apex and crotchet form a very oblique line (Fig. 8). Central Nepal .... *smetanai* sp. n.

- Smaller species, length <4.7 mm; prothorax shorter and wider, ratio l/w 1.16-1.19 (Fig. 63); elytra shorter, ratio l/w 1.51-1.52, <1.90 x as wide as prothorax (Fig. 31); apex of aedeagus barely curved up, upturned apex and crotchet form a distinct angle (Fig. 9). Eastern Nepal ...... *uncinata* sp. n.

13. Aedeagus with remarkably slender apical part, apex semicircular, with minute denticle on lower side (**C85** fig. 2). Eastern Nepal ..... *martensi* Casale

- Aedeagus without any denticle on lower side of apex, apical part not remarkably slender (Figs 10-14) 14

14. Apex of aedeagus distinctly curved down, wide or slightly club-shaped as seen from below; genital ring rather wide (Figs 13, 14) 15

- Apex of aedeagus straight of faintly curved up, narrow and acute as seen from below; genital ring narrow and rather triangular (Figs 10-12) 16

15. Head shorter and wider, posteriorly shortly rounded, eyes rather large, orbit <2.7 x as long as eye (Fig. 35); aedeagus shorter and stouter, apex slightly club-shaped as seen from below (Fig. 13). Northeast India .... *depressipennis* sp. n.

- Head longer and narrower, posteriorly markedly ovalish, eyes small, orbit c. 3.75 x as long as eye (Fig. 36); aedeagus longer and narrower, apex wide as seen from below (Fig. 14). Nepal .... *angusticeps* sp. n.

16. Large species, length >4.8 mm; head posteriorly markedly ovalish (Fig. 48); lower surface of aedeagus gently bisinuate and denticulate sclerite in internal sac elongate (Fig. 10). Northeastern India, Darjeeling area .... *besucheti* sp. n.

- Smaller species, length <4.0 mm; head posteriorly shortly rounded (Fig. 49) or markedly triangular (Fig. 50); lower surface of aedeagus either almost straight (Fig. 11) or denticulate sclerite in internal sac short (Fig. 12). Northeastern India, Khasi Hills, or Eastern Nepal 17

17. Head posteriorly shortly rounded (Fig. 49); prothorax longer and narrower, ratio l/w 1.38 (Fig. 65); lower surface of aedeagus straight (Fig. 11). Northeastern India, Khasi Hills .... *minor* sp. n.

- Head posteriorly triangular (Fig. 50); prothorax shorter and wider, ratio l/w 1.23 (Fig. 66); lower surface of aedeagus bisinuate (Fig. 12). Eastern Nepal . . . . *punctipennis* sp. n.

18. Posterior part of head elongate, markedly oval-shaped, head rather pentagonal, comparatively narrow and elongate, ratio l/w >1.58 (Figs 41, 42, 48, 52); always rather large species, length >4.7 mm 19

- Posterior part of head either shortly rounded (Figs 43-47, 49, 51) or distinctly triagonal (**L55** fig. 90; **M81** fig. 4; **C85** fig. 1; figs 37-40, 50), head not pentagonal, usually shorter and wider, ratio l/w <1.60, commonly far less; mostly smaller species, length rarely up to 5.0 mm 22

19. Very large species, length 5.65 mm; prothorax comparatively short and wide, ratio l/w 1.23 (Fig. 57), ratio width pronotum/head 1.25. Northeast India . . . . *indica* Darlington

- Smaller species, length <5.3 mm; prothorax longer and narrower, ratio l/w >1.27 (Figs 58, 64, 68), ratio width pronotum/head <1.18 (Figs 26, 32, 36) 20

20. Eyes comparatively large, orbit <3.25 x as long as eye (Fig. 48). Northeastern India . . . . *besucheti* sp. n.

- Eyes smaller, orbit >3.75 x as long as eye (Figs 42, 52) 21

21. Head longer and narrower, ratio l/w 1.77 (Fig. 52); pronotum longer and narrower, ratio l/w 1.38, with comparatively wide base, <2 x as wide as elytra (Figs 36, 68). Nepal . . . . *angusticeps* sp. n.

- Head shorter and wider, ratio l/w 1.61 (Fig. 42); pronotum shorter and wider, ratio l/w 1.31, with comparatively narrower base, >2 x as wide as elytra (Figs 26, 58). Northeastern India . . . . *ovaliceps* sp. n.

22. Posterior part of head considerably widened, head markedly triagonal (**L55** figs. 90; **M81** fig. 4; **C85** fig. 1; figs 37-40, 50); small species, length always <4.5 mm 23

- Posterior part of head less widened, more or less rounded off, head not markedly triagonal (Figs 43-47, 49, 51); commonly larger species 27

23. Head rather elongate, ratio l/w 1.53; eyes comparatively small, orbit >3.5 x as long as eye (**C85** fig. 1; fig. 38). East Nepal . . . . *martensi* Casale

- Head shorter, ratio l/w <1.47; eyes slightly larger, orbit <3.2 x as long as eye (**L55** fig. 90: **M81** fig. 4; figs 37, 39, 40, 50) 24

24. Eyes comparatively large, orbit slightly >2.5 x as long as eye (Fig. 50); whole surface, in particular elytra very coarsely punctate (Fig. 34). East Nepal . . . . *punctipennis* sp. n.

- Eyes smaller, orbit >3 x as long as eye (**L55** fig. 90; **M81** fig. 4; figs 37, 39, 40); surface less coarsely punctate (Figs 21, 23, 24) 25

25. Head longer and narrower, ratio l/w >1.42 (Figs 39, 40); prothorax longer and narrower, ratio l/w >1.23 (Figs 55, 56); generally smaller species, length <4.25 mm 26

- Head shorter and wider, ratio l/w <1.36 (Fig. 37); prothorax shorter and wider, ratio l/w >1.17 (Fig. 53); generally larger species, length >4.25 mm. Eastern Nepal, Sikkim, northeastern India . . . . *elegans* Landin

26 Slightly larger species, length >4 mm; leytra slightly shorter, ratio l/w <1.51 (Fig. 23); puncturation on head very sparse and fine (Fig. 39). Northeastern India . . . . *laeviceps* sp. n.

- Slightly smaller species, length <3.9 mm; elytra slightly longer, ratio l/w >1.52 (Fig. 24); puncturation on head denser and coarser (Fig. 40). Northeastern India . . . . *inermis* sp. n.

27. Eyes larger, orbit <2.75 x as long as eye (Figs 49, 51). Northeastern India . . . 28

- Eyes smaller, orbit >3.33 x as long as eye (Figs 43-47). Nepal 29

28 Larger species, length >4.5 mm; pronotum slightly shorter and wider, ratio l/w <1.32 (Fig. 67); elytra markedly depressed, apical margin distinctly oblique and redressed towards suture (Fig. 35). . *depressipennis* sp. n.

- Smaller species, length 4 mm; pronotum slightly longer and narrower, ratio l/w 1.38 (Fig. 65); elytra less depressed, apical margin transverse, not redressed towards suture (Fig. 33) . . . . *minor* sp. n.

29. Head posteriorly with rather elongate curvature, fairly oval-shaped (Fig. 43); elytra shorter, ratio l/w <1.44, perceptibly >2 x as wide as prothorax (Fig. 27). Central Nepal . . . . *nepalensis* sp. n.

- Head posteriorly with rather short curvature, less oval-shaped (Figs 44-47); elytra longer, ratio l/w >1.49, barely >2 x as wide as prothorax or narrower (Figs 28-31) 30

30. Larger species, length >4.95 mm; head longer and narrower, posteriorly less widened, ratio l/w >1.55 (Fig. 46); elytra slightly longer and narrower, ratio l/w >1.55 (Fig. 30). Central Nepal . . . . *smetanai* sp. n.

- Smaller species, length <4.7 mm; head shorter and wider, posteriorly more widened, ratio l/w <1.53 (Figs 44, 45, 47); elytra slightly shorter and wider, ratio l/w <1.55 (Figs 28, 29, 31). Eastern Nepal 31

31. Generally smaller species, length <4.3 mm; eyes generally smaller, orbit >3.75 x as long as eye (Fig. 45) . . . . *schawalleri* sp. n.

- Generally larger species, length >4.3 mm; eyes generally larger, orbit <3.75 x as long as eye (Figs 44, 47) 32

32. Head slightly shorter, posteriorly more widened, ratio l/w <1.47; eyes slightly smaller, orbit >3.5 x as long as eye (Fig. 44); prothorax slightly longer and narrower, ratio l/w >1.20 (Fig. 60); elytra slightly longer, ratio l/w >1.53, c. 2 x as wide as prothorax (Fig. 28) . . . . *hamifera* sp. n.

- Head slightly longer, posteriorly less widened, ratio l/w >1.50; eyes slightly larger, orbit <3.5 x as long as eye (Fig. 47); prothorax slightly shorter and wider, ratio l/w <1.19 (Fig. 63); elytra slightly shorter, ratio l/w <1.52, perceptibly <2 x as wide as prothorax (Fig. 31) . . . . . *uncinata* sp. n.

Gunvorita elegans Landin, 1955 Figs 21, 37, 53

Landin, 1955: 467, fig. 90; DARLINGTON 1968: 210; MATEU 1981, 721, fig. 7; CASALE 1985, 41.

Note: The male genitalia of this species were figured by MATEU (1981) who examined the holotype. Therefore, there is no need to redescribe the male genitalia of this species. For the benefit of the user, however, measurements and ratios of some specimens alluded to this species by examination of the male genitalia are added.

SUPPLEMENTARY DESCRIPTION:

Measurements: Length: 4.25-4.45 mm; width: 1.5-1.55 mm. Ratios. Length/width of head: 1.35-1.36; length orbit/eye: 2.97-3.02; length/width of pronotum: 1.16-1.17; width widest part/base of pronotum: 1.76; width pronotum/head: 1.10-1.11; length/width of elytra: 1.46-1.48; width elytra/pronotum: 1.91.

The aedeagi of both specimens mentioned below exactly match the figure of the holotype given by Mateu (1981, fig. 7).

This species is now known from eastern Nepal, Sikkim, and northeastern India.

New records: 1 ♂, Nepal Expeditionen Jochen Martens, 255 llam Distr., zw. Mai Pokhari, Mai Majuwa und Gitang Khola 2100-1800 m Kulturland 26 Aug 83 Martens & Daams leg. (SMNS); 1 ♂, Nepal Expeditionen Jochen Martens, 254a llam Distr. Mai Pokhari 2150-2250 m 23-25 Aug 1983 Berlese Martens & Daams leg (CBM).

Gunvorita martensi Casale, 1985 Figs 22, 38, 54

Casale, 1985: 42.

Type material: Holotype: 185, Nepal, Ilam Dist. zwischen Mai Pokhari und Ilam, 1330 m, quelliger Hang, Kulturland, Martens & Ausobsky 1 Apr. 80/ Holotypus ♂ *Gunvorita martensi* n. sp. 1984 A. Casale Det. (SMF).

Note. The measurements in Casale's original description (CASALE 1985) do not agree with measurements made taken from the holotype which is actually considerably smaller than noted by Casale. Apart from that discrepancy, the description is detailed and reliable, and the male aedeagus is correctly figured. Therefore, the male genitalia are not redescribed.

Diagnosis: Rather small species with elongate, distinctly triangular head, distinguished by odd shaped aedeagus with two characteristic edges on lower surface, elongate, rather straight though upturned apical part and a hemispherical apex that bears a tiny hook at the lower surface.

SUPPLEMENTARY DESCRIPTION:

Measurements: Length: 4.2 mm; width: 1.4 mm. Ratios. Length/width of head: 1.53; length orbit/eye: 3.67; length/width of pronotum: 1.29; width widest part/base of pronotum: 1.74; width pronotum/head: 1.09; length/width of elytra: 1.51; width elytra/pronotum: 2.05.

This species is thus far known from the type locality in eastern Nepal only.

Gunvorita laeviceps sp. n. Figs 1, 15, 23, 39, 55

Type material: Holotype: ♂ India W. Bengal, Darjeeling distr. Sevoke 200 m. 7.X.78, Besuchet Löbl (MHNG). (MHNG).

Paratypes: 1 ♀, same data (MHNG); 2 ♀♀, India W. Bengal, Darjeeling distr. Kalimpong-Algarah 1400 m, 8.X.78 Besuchet Löbl (CBM, MHNG): 1 ♀, India W. Bengal, Darjeeling distr. Singla 300 m, 17.X.78 Besuchet Löbl (MHNG).

Diagnosis: Rather small species with posteriorly markedly triagonal head, further distinguished by shape of aedeagus with rather elongate, markedly upturned apical part and a very small crotchet situated shortly in front of apex.

DESCRIPTION:

Measurements: Length: 4.0-4.25 mm; width: 1.4-1.45 mm. Ratios. Length/width of head: 1.42-1.45; length orbit/eye: 2.98-3.20; length/width of pronotum: 1.23-1.27; width widest part/base of pronotum: 1.70-1.81; width pronotum/head: 1.10-1.15; length/width of elytra: 1.50-1.51; width elytra/pronotum: 2.05-2.08.

Colour: Piceous, labrum, palpi, legs, and antennae yellowish.

Head: Comparatively short, posteriorly considerably widened, markedly triangular, widest near base, orbit posteriorly shortly rounded off. Upper surface gently convex. Eyes small, depressed, length c. 1/3 of orbit length to beginning of curvature. Clypeus anteriorly slightly convex, surface in middle convex, uneven, lateral angles (above base of antenna) distinctly projecting. Clypeal seta far removed from apex, at apex on either side two hairs. Clypeal suture posterio-laterally with a large, deep groove each side. Frons convex, between eyes with a shallow, circular, slightly oblique groove on either side. Labrum anteriorly barely excised, 6-setose, inner 4 setae shorter, lateral margin rather sparsely pilose. Mandibles short, at apex sharply incurved. Mentum with short and wide, triangular tooth. Labium anteriorly concave. Maxillary palpus rather short, apex obliquely cut. Terminal segment of labial palpus very large but comparatively short. Antenna moderately elongate, slightly surpassing middle of pronotum. Median antennomeres slightly longer than wide, 3rd antennomere <2/3 as long as 1st, <1.5 x as long as 2nd antennomere. Surface glossy,with traces of microreticulation only on clypeus. Puncturation sparse, very fine and superficial, distance between punctures about 4-5 x as wide as diameter of punctures. Pilosity sparse, elongate, hirsute, erect, inclined anteriorly. Both supraorbital setae elongate, though not much longer than pilosity, posterior supraorbital seta situated far behind eye at base of head.

Pronotum: Moderately elongate, rather cordiform, considerably longer than wide, distinctly wider than head, widest in anterior third. Upper surface markedly convex. Lateral margin convex in anterior two thirds, sinuate in front of posterior angles. Apex fairly wide, slightly excised, anterior angles obtuse, slightly projecting. Base narrow, laterally oblique but not excised, basal angles slightly projecting, obtuse. Lateral margin rather inconspicuous, without distinct border line, marginal channel absent. Median line fine, not impressed. Prebasal grooves almost absent. Anterior marginal seta elongate, situated at anterior third of pronotum, posterior seta shorter, situated right on basal angle. Surface without microreticulation, glossy, with moderately sparse, coarse puncturation. Distance between punctures c. as wide as

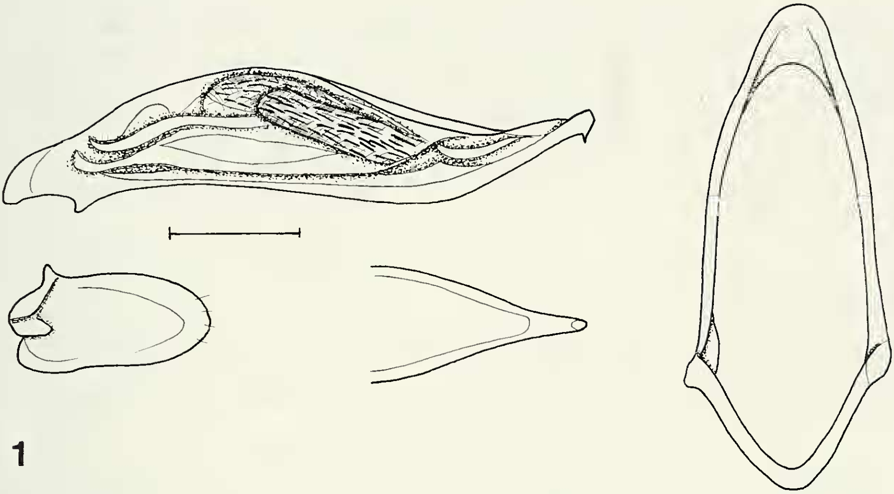

FIG. 1

Gunvorita laeviceps sp. n. ♂ genitalia: Aedeagus (left side), shape of apex (from below), left paramere, genital ring. Scale: 0.25 mm.

diameter of punctures. Pilosity moderately sparse, elongate, hirsute, irregularly inclined, though rather erect.

Elytra: Fairly elongate, triangular, laterally slightly curved, widest in posterior third, upper surface moderately convex, at base distinctly raised. Shoulders narrow, oblique, not projecting. Apex wide, faintly sinuate, slightly oblique, not redressed to suture. Striae irregularly marked by rows of punctures, puncturation rather sparse, coarse, rather irregular, in apical and lateral parts punctures slightly finer. Fixed setae in third interval hardly recognizable within the coarse puncturation. Series of marginal pores very difficult to detect when setae broken, apparently consisting of 8 basal, 3 postmedian, 6 apical pores, and 1 pore at apex of 3rd stria. Setae very elongate. Surface without microreticulation, glossy. Pilosity rather sparse, rather elongate, hirsute, irregular, inclined posteriorly, fairly depressed.

Male genitalia: Genital ring narrow, elongate, ovalish-triangular, with moderate apical plate, almost symmetric. Aedeagus elongate, with elongate, suddenly upturned apical third that bears a very small crotchet shortly in front of apex. Apex very narrow seen from below. Lower surface almost straight in basal two thirds, then suddenly curved, then again straight. Internal sac in middle with large, coiled, markedly dentate sclerite, and with another dentate sclerite on top. For parameres see fig. 1, left paramere rather elongate, at apex evenly rounded. Right paramere unknown.

Female genitalia: Stylomere 2 narrow and elongate with acute apex, with 2 elongate ventral ensiform setae the lower one being much shorter, one elongate dorsal ensiform seta, and a nematiform seta situated in a large groove in middle between base and apex. Apex of stylomere 1 medially with 1 nematiform seta.

Variation: The specimen from Singla somewhat varies in having a shorter and wider prothorax and in coarser puncturation on head.

Etymology: The name refers to the smooth surface of the head.

Distribution: Northeastern India, Darjeeling region.

Collecting circumstances: Collected by seving of leaf litter at low to median altitudes.

Gunvorita inermis sp. n. Figs 2, 16, 24, 40, 56

Type material: Holotype: ♂, India W. Bengal, Darjeeling distr. Mahanadi 1200 m, 6.X.78 Besuchet-Löbl (MHNG).

Paratypes: 11 ♂♂, 7 ♀♀, same data (CBM; MHNG); 1 ♂, 2 ♀♀, same locality, 19.X.78 (MHNG, ZSM).

Diagnosis: Small species with posteriorly markedly triagonal head, further distinguished by shape of aedeagus with a characteristic edge in middle of lower surface, moderately elongate, slightly upturned apical part and a rather small crotchet situated shortly at the very apex.

DESCRIPTION:

Measurements: Length: 3.6-3.9 mm; width: 1.2-1.3 mm. Ratios. Length/width of head: 1.44-1.47; length orbit/eye: 3.05-3.20; length(/width of pronotum: 1.24-1.28; width widest part/base of pronotum: 1.71-1.76; width pronotum/head: 1.05-1.11; length/width of elytra: 1.52-1.56; width elytra/pronotum: 1.93-2.02.

Colour: More or less dark piceous, suture of elytra narrowly reddish. Labrum, palpi, legs, and antennae yellowish.

Head: Comparatively short, posteriorly considerably widened, triangular, widest near base, orbit posteriorly shortly rounded off. Upper surface gently convex. Eyes small, laterally slightly produced, length slightly <1/3 of orbit length to beginning of curvature. Clypeus anteriorly slightly convex, surface in middle convex, uneven, lateral angles (above base of antenna) distinctly projecting. Clypeal seta far removed from apex, at apex on either side two hairs. Clypeal suture posterio-laterally with a large, deep groove each side. Frons convex, between eyes with a shallow, ovalish to even rather horseshoe-shaped, slightly oblique groove on either side. Labrum anteriorly barely excised, 6-setose, inner 4 setae shorter, lateral margin rather sparsely pilose. Mandibles short, at apex sharply incurved. Mentum with short and wide, triangular tooth. Labium anteriorly concave. Maxillary palpus rather short, apex obliquely cut. Terminal segment of labial palpus very large, comparatively elongate. Antenna moderately elongate, slightly surpassing middle of pronotum. Median antennomeres slightly longer than wide, 3rd antennomere distinctly <2/3 as long as 1st, c 1.3 x as long as 2nd antennomere. Surface glossy, with traces of microreticulation only on clypeus. Puncturation sparse, fine and superficial, distance between punctures about 3-4 x as wide as diameter of punctures. Pilosity sparse, elongate, hirsute, erect, inclined anteriorly. Both

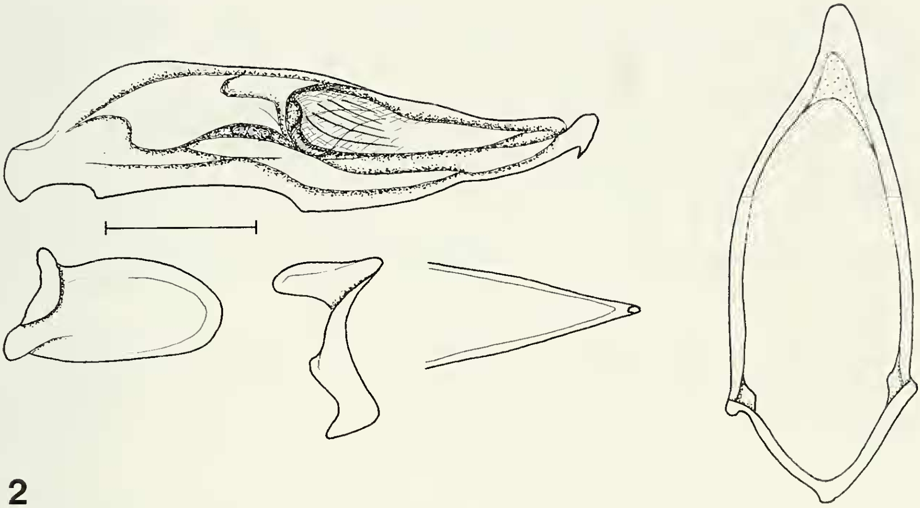

FIG. 2

Gunvorita inermis sp. n. ♂ genitalia: Aedeagus (left side), shape of apex (from below), left and right parameres, genital ring. Scale: 0.25 mm.

supraorbital setae elongate, though not much longer than pilosity, posterior supraorbital seta situated far behind eye at base of head.

Pronotum: Moderately elongate, rather cordiform, considerably longer than wide, distinctly wider than head, widest in anterior third. Upper surface markedly convex. Lateral margin convex in anterior half, then almost straight, sinuate just in front of posterior angles. Apex fairly wide, slightly excised, anterior angles obtuse, slightly projecting. Base narrow, laterally oblique but not excised, basal angles slightly projecting, obtuse. Lateral margin rather inconspicuous, without distinct border line, marginal channel absent. Median line fine, not impressed. Prebasal grooves almost absent. Anterior marginal seta elongate, situated at anterior third of pronotum, posterior seta slightly shorter, situated right on basal angle. Surface without microreticulation, glossy, with fairly dense, coarse puncturation. Distance between punctures slightly less wide than diameter of punctures. Pilosity moderately sparse, elongate, hirsute, irregularly inclined, though rather erect.

Elytra: Fairly elongate, triangular, laterally slightly curved, widest in posterior third, upper surface moderately convex, at base slightly raised, odd intervals, especially the 5th, slightly raised in basal half. Shoulders moderately narrow, oblique, not projecting. Apex wide, absolutely straight, transverse, not redressed to suture. Striae irregularly marked by rows of punctures, puncturation rather sparse, coarse, rather irregular, in apical and lateral parts punctures slightly finer. Fixed setae in third interval hardly recognizable within the coarse puncturation. Series of marginal pores very difficult to detect when setae broken, apparently consisting of 8 basal, 3 postmedian, 6 apical pores, and 1 pore at apex of 3rd stria. Setae very elongate. Surface without microreticulation, glossy. Pilosity rather sparse, rather elongate, hirsute, irregular, inclined posteriorly, fairly depressed.

Male genitalia: Genital ring narrow, elongate, ovalish-triangular, with narrow, elongate apical plate, slightly asymmetric. Aedeagus fairly elongate, with moderately elongate, gently upturned apical part that bears a small crotchet at the very apex. Apex narrow and acute seen from below. Lower surface with a characteristic edge about in middle, then gently bisinuate-oblique. Internal sac in middle with large though rather short, coiled, dentate sclerite. For parameres see fig. 2, both parameres rather elongate.

Female genitalia: Stylomere 2 narrow and elongate with acute apex, with 2 elongate ventral ensiform setae the lower one being much shorter, one elongate dorsal ensiform seta, and a nematiform seta situated in a large groove in apical two fifth. Apex of stylomere 1 medially apparently with 1 nematiform seta.

Variation: Little variation noted.

Etymology: The name refers to the small apical hook at the aedeagus.

Distribution: Northeastern India, Darjeeling region. Known only from type locality.

Collecting circumstances: Collected by sieving of leaf litter at median altitude.

Gunvorita indica Darlington, 1968 Figs 3, 25, 41, 57

Darlington, 1968: 208, fig. 1; MATEU 1981: 722, figs 5, 8 (erroneously!); CASALE 1985: 42.

Type material: Holotype: ♂, Holotype/ India: Darjeeling, Ghoom, 26.V.1931, Dr M. Cameron, B.M.1931-452./ Gen. et sp. nov. Place provisionally after *Agastus*/ Holotype *Gunvorita indica* Darl. (BMNH).

Note: The figure given by MATEU (1981, fig. 8) of the very strange male genitalia ascribed to *G. indica* was taken from a specimen from Nepal that was not available for reeximantion. Unfortunately, Mateu failed to examine and compare this specimen (and additional specimens) with the holotype. It is not easily understood how Mateu came to a reliable identification using the raw sketch of the habitus of *G. indica* and the fairly poor description given by DARLINGTON (1968, fig. 1). Examination of the holotype of *G. indica* revealed a completely different aedeagus bearing a crotchet right at the apex. Hence, the specimen sketched by Mateu must represent another, yet undescribed species.

Diagnosis: Very large species with elongate, posteriorly rounded, not triangular though characteristically oblique head, further distinguished by elongate aedeagus with elongate, rather straight apical part and a small crotchet situated immediately at apex.

SUPPLEMENTARY DESCRIPTION:

Measurements: Length: 5.65 mm; width: 1.8 mm. Ratios. Length/width of head: 1.78; length orbit/eye: 3.93; length/width of pronotum: 1.23; width widest

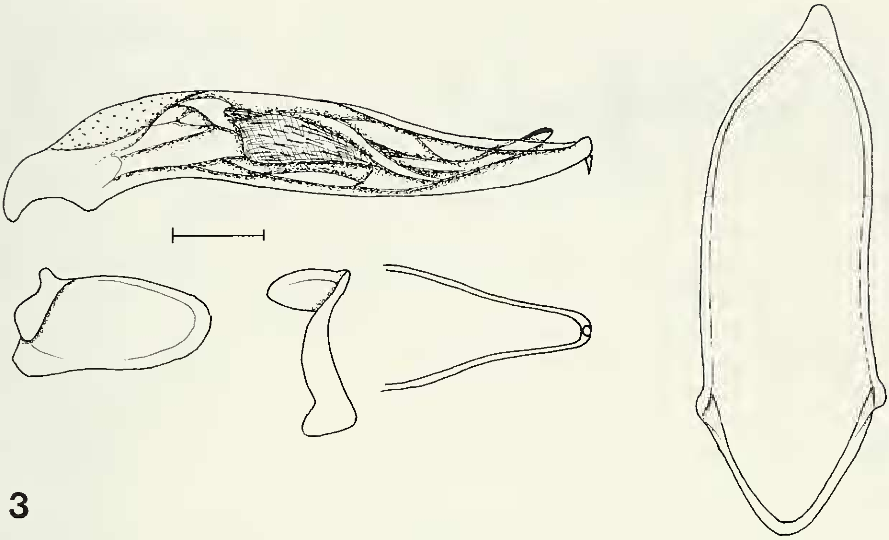

FIG. 3

Gunvorita indica Darlington. ♂ genitalia. For legend see fig. 2.

part/base of pronotum: 1.78; width pronotum/head: 1.25; length/width of elytra: 1.54; width elytra/pronotum: 2.02.

Male genitalia: Genital ring narrow and elongate, almost parallel, with deep apex, rather symmetric. Aedeagus elongate, with elongate, almost straight, barely upturned apical part that bears a small crotchet at the very tip. Apex moderately wide seen from below. Lower surface gently convex. Internal sac in middle with large, coiled, dentate sclerite. For parameres see fig. 3, left paramere rather elongate, right paramere short.

This species is thus far known only from the type locality in northeastern India.

Gunvorita ovaliceps sp. n. Figs 4, 26, 42, 58

Type material: Holotype: ♂, India W. Bengal, Darjeeling dist. 13 km N. Ghoom 1500 m. 15.X.78, Besuchet Löbl (MHNG).

Diagnosis: Large species with rounded, posteriorly markedly pentagonal head, further distinguished by shape of aedeagus with moderately elongate, fairly upturned apical part and a small crotchet situated at the very apex.

DESCRIPTION:

Measurements: Length: 5.05 mm; width: 1.6 mm. Ratios. Length/width of head: 1.60; lengh orbit/eye: 3.87; length/width of pronotum: 1.31; width widest part/ base of pronotum: 1.75; width pronotum/head: 1.14; length/width of elytra: 1.59; width elytra/pronotum: 1.94.

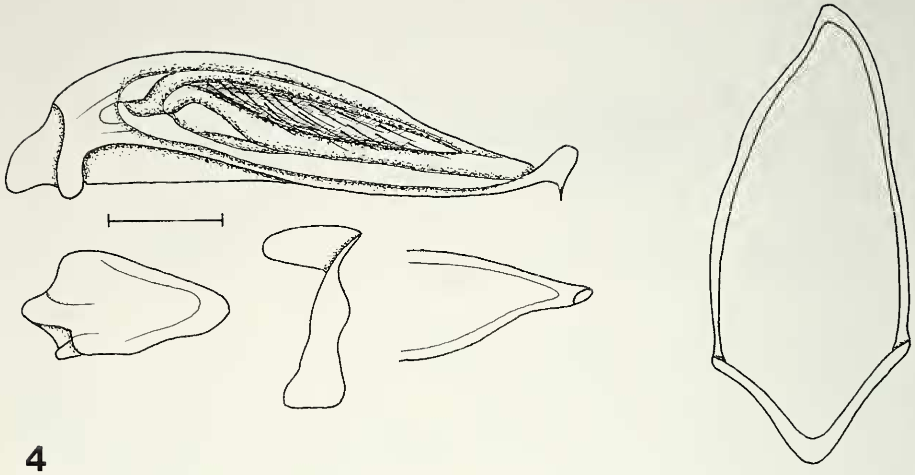

FIG. 4
Gunvorita ovaliceps sp. n. ♂ genitalia. For legend see fig. 2.

Colour: Piceous, elytra slightly lighter than fore body, suture narrowly reddish. Labrum, palpi, legs, and antennae yellowish.

Head: Elongate, oval-shaped, posteriorly markedly widened, rather distinctly pentagonal, widest in posterior third, orbit posteriorly rather oblique, rounded off. Upper surface gently convex. Eyes very small, laterally slightly produced, length about 1/4 of orbit length to beginning of curvature. Clypeus anteriorly slightly convex, surface in middle convex, uneven, lateral angles (above base of antenna) distinctly projecting. Clypeal seta far removed from apex, at apex on either side two hairs. Clypeal suture posterio-laterally with a large, deep groove each side. Frons convex, between eyes with a rather deep, circular, slightly oblique groove on either side that posteriorly in middle combine to a more shallow triangular groove. Labrum anteriorly barely excised, 6-setose, inner 4 setae slightly shorter, lateral margin rather sparsely pilose. Mandibles short, at apex sharply incurved. Mentum with short and wide, triangular tooth. Labium anteriorly concave. Maxillary palpus rather elongate, apex obliquely cut. Terminal segment of labial palpus large and very elongate. Antenna comparatively elongate, slightly surpassing middle of pronotum. Median antennomeres slightly longer than wide, 3rd antennomere <2/3 as long as 1st, c. 1.5 x as long as 2nd antennomere. Surface glossy, with traces of microreticulation only on clypeus. Puncturation very sparse especially on frons and vertex, very fine and superficial, distance between punctures about 4-5 x as wide as diameter of punctures. Pilosity sparse, elongate, hirsute, erect, inclined anteriorly. Both supraorbital setae broken, posterior supraorbital seta situated far behind eye at beginning of basal curvature.

Pronotum: Rather elongate, fairly cordiform, considerably longer than wide, distinctly wider than head, widest in anterior third. Upper surface markedly convex. Lateral margin convex in anterior two thirds, sinuate in front of posterior angles. Apex fairly wide, slightly excised, anterior angles obtuse, slightly projecting. Base narrow, laterally oblique but not excised, basal angles slightly projecting, obtuse. Lateral margin rather inconspicuous, without distinct border line, marginal channel absent. Median line fine, not impressed. Prebasal grooves almost absent. Anterior marginal seta elongate, situated at anterior third of pronotum, posterior setae shorter, situated right on basal angles. Surface without microreticulation, glossy, with moderately sparse, rather coarse puncturation. Distance between punctures c. as wide as diameter of punctures, only near median line punctures somewhat finer and sparser. Pilosity moderately sparse, elongate, hirsute, irregularly inclined, though rather erect.

Elytra: Rather elongate, triangular, laterally slightly curved, widest in posterior third, upper surface depressed, odd intervals in anterior half slightly raised. Shoulders narrow, oblique, not projecting. Apex wide, faintly concave, slightly oblique, not redressed to suture. Striae irregularly marked by rows of punctures, puncturation rather sparse, coarse, rather irregular, in apical and lateral parts punctures finer and somewhat rasp-like. Fixed setae in third interval hardly recognizable within the coarse puncturation. Series of marginal pores very difficult to detect when setae broken, apparently consisting of 8 basal, 3 postmedian, 6 apical pores, and 1 pore at apex of 3rd stria. Setae very elongate. Surface without microreticulation, rather glossy. Pilosity rather sparse, fairly elongate, hirsute, irregular, inclined posteriorly, fairly depressed.

Male genitalia: Genital ring rather narrow, ovalish-triangular, without distinct apical plate, slightly asymmetric. Aedeagus rather short, with short, distinctly upturned apical part that bears a fairly small crotchet at the very apex. Apex narrow as seen from below. Lower surface almost straight. Internal sac in middle with large, very elongate, coiled, markedly dentate sclerite. For parameres see fig. 4, left paramere triagonal and rather elongate.

Female genitalia: Unknown.

Variation: Unknown.

Etymology: The name refers to the markedly ovalish shape of head.

Distribution: Northeastern India, Darjeeling region. Known only from type locality.

Collecting circumstances: Collected by sieving of leaf litter at median altitude.

Gunvorita nepalensis sp. n. Figs 5, 17, 27, 43, 59

Type material: Holotype: ♂, Nepal (Pr. Bagmati) Phulchauki nr. Kathmandu, 2300 m, 10.V.81, I. Löbl, 66 (MHNG).

Paratypes: 10 ♂♂, 3 ♀♀, same data (CBM, MHNG); 2 ♂♂, Nepal 424 Lalitpur Distr. Phulchoki Mt. 1800-2000 m 25.IV.1995 Martens & Schawaller (SMNS).

Diagnosis: Large species with rounded, not triangular head, distinguished by shape of aedeagus with elongate, rather straight apical part and a small crotchet situated immediately at apex.

DESCRIPTION:

Measurements: Length: 4.55-5.0 mm; width: 1.65-1.8 mm. Ratios. Length/width of head: 1.51-1.61; length orbit/eye: 3.73-3.95; length/width of pronotum: 1.20-1.26; width widest part/base of pronotum: 1.70-1.74; width pronotum/head: 1.14-1.21; length/width of elytra: 1.38-1.44; width elytra/pronotum: 2.03-2.14.

Colour: More or less dark piceous, suture of elytra narrowly reddish. Labrum, palpi, legs, and antennae light reddish.

Head: Elongate, oval-shaped, posteriorly widened, though not triangular, widest in posterior third, orbit posteriorly widely rounded off, rather oblique. Upper surface gently convex. Eyes small, depressed, length slightly >1/4 of orbit length to beginning of curvature. Clypeus anteriorly slightly convex, surface in middle convex, uneven, lateral angles (above base of antenna) distinctly projecting. Clypeal seta far removed from apex, at apex on either side two hairs. Clypeal suture posterio-laterally with a large, deep groove each side. Frons convex, between eyes with a circular, slightly oblique groove on either side. Labrum anteriorly barely excised, 6-setose, inner 4 setae slightly shorter, lateral margin rather sparsely pilose. Mandibles short, at apex sharply incurved. Mentum with short and wide, triangular tooth. Labium anteriorly concave. Maxillary palpus rather short, apex obliquely cut. Terminal segment of labial palpus very large but comparatively short. Antenna comparatively elongate, surpassing middle of pronotum. Median antennomeres slightly longer than wide, 3rd antennomere <2/3 as long as 1st, c. 1.5 x as long as 2nd antennomere. Surface glossy, with traces of microreticulation only on clypeus. Puncturation sparse, very fine and superficial, distance between punctures about 4-5 x as wide as diameter of punctures. Pilosity sparse, elongate, hirsute, rather erect, inclined anteriorly. Both supraorbital setae elongate, though not much longer than pilosity, posterior supraorbital seta situated far behind eye at beginning of basal curvature.

Pronotum: Rather elongate, fairly cordiform, considerably longer than wide, distinctly wider than head, widest in anterior third. Upper surface markedly convex. Lateral margin strongly convex in anterior two thirds, sinuate in front of posterior angles. Apex fairly wide, slightly excised, anterior angles obtuse, slightly projecting. Base narrow, laterally oblique but not excised, posterior angles slightly projecting, obtuse. Lateral margin inconspicuous, without distinct border line, marginal channel absent. Median line fine, not impressed. Prebasal grooves almost absent. Anterior marginal seta elongate, situated at anterior third of pronotum, posterior seta shorter, situated right on basal angle. Surface without microreticulation, glossy, with sparse, very fine puncturation. Distance between punctures c. 4-5 x as wide as diameter of punctures. Pilosity sparse, elongate, hirsute, irregularly inclined, though rather erect.

Elytra: Rather elongate, triangular, laterally slightly curved, widest in posterior third, upper surface depressed, odd intervals in anterior half slightly raised. Shoulders narrow, oblique, not projecting. Apex wide, almost straight, transverse, not redressed to suture. Striae irregularly marked by rows of punctures, puncturation fairly dense, rather coarse, rather irregular, in apical and lateral parts punctures somewhat rasp-like. Fixed setae in third interval hardly recognizable within the coarse punc-

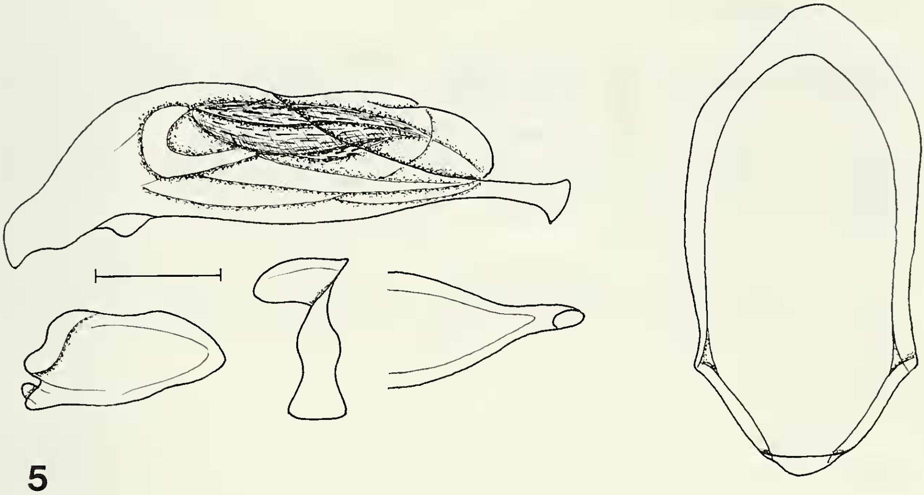

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FIG. 5

Gunvorita nepalensis sp. n. ♂ genitalia. For legend see fig. 2.

turation. Series of marginal pores very difficult to detect when setae broken, apparently consisting of 8 basal, 3 postmedian, 6 apical pores, and 1 pore at apex of 3rd stria. Setae very elongate. Surface without microreticulation, rather glossy. Pilosity dense, rather elongate, hirsute, irregular, inclined posteriorly, fairly depressed.

Male genitalia: Genital ring wide, ovalish, widened to apex, rather symmetric. Aedeagus fairly elongate, with elongate, almost straight, barely upturned apical part that bears a small crotchet at the very tip. Apex narrow seen from below. Lower surface gently bisinuate. Internal sac in middle with large, coiled, strongly dentate sclerite. For parameres see fig. 5, left paramere rather elongate.

Female genitalia: Stylomere 2 narrow and elongate with acute apex, with 2 elongate ventral ensiform setae, one elongate dorsal ensiform seta, and a nematiform seta situated in a large groove in middle between base and apex. Apex of stylomere 1 medially with 2-3 nematiform setae.

Variation: Little variation noted apart from minor differences in relative shape of head, pronotum, and elytra.

Etymology: The name refers to the range of this species.

Distribution: Central Nepal. Known only from a small area around type locality.

Collecting circumstances: Collected by sieving ground litter at median to fairly high altitudes.

Gunvorita hamifera sp. n. Figs 6, 18, 28, 44, 60

Type material: Holotype: ♂, Nepal Expeditionen Jochen Martens, 412 Sankhua Sabha Distr., Arun Valley betw. Mure and Murure, mixed broad-leaved forest, 2050-2150 m, 9-17 June 88 Martens & Schawaller leg. (SMNS).

Paratypes: 2 ♂♂, 1 ♀, same data (CBM, SMNS); 1 ♀, Nepal Expeditionen Jochen Martens, 414 Sankhua Sabha Distr., Arun Valley, Chichila, 1900-2000 m, Quercus forest, bushes near village, 10-20 June 88 Martens & Schawaller leg. (SMNS); 1 ♀, Nepal Expeditionen Jochen Martens, 297 Terhathum Distr., Tinjura Dara, 2450-2850 m, artenreicher Laubmischwald, 17 Sep 83 (Martens & Daams 1. (SMNS).

Diagnosis: Medium sized species with rounded, not triangular head and small eyes, further distinguished by rather elongate aedeagus with elongate, rather straight apical part and a large crotchet situated immediately at apex.

DES CRIPTION:

Measurements: Length: 4.3-4.65 mm; width: 1.45-1.55 mm. Ratios. Length/width of head: 1.42-1.47; length orbit/eye: 3.55-3.78; length/width of pronotum: 1.20-1.27; width widest part/base of pronotum: 1.69-1.77; lwidth pronotum/head: 1.05-1.12; length/width of elytra: 1.53-1.55; width elytra/pronotum: 1.95-2.02.

Colour: More or less dark piceous, suture of elytra narrowly reddish. Labrum, palpi, legs, and antennae light reddish.

Head: Elongate, oval-shaped, posteriorly widened, though not triangular, widest in posterior third, orbit posteriorly widely rounded off, fairly oblique. Upper surface gently convex. Eyes small, depressed, laterally little protruded, length slightly >1/4 of orbit length to beginning of curvature. Clypeus anteriorly slightly convex, surface in middle convex, uneven, lateral angles (above base of antenna) distinctly projecting. Clypeal seta far removed from apex, at apex on either side two hairs. Clypeal suture posterio-laterally with a large, deep groove each side. Frons convex, in middle with a large, shallow, about v-shaped groove the acute part of which is directed posteriad. Labrum anteriorly barely excised, 6-setose, inner 4 setae slightly shorter, lateral margin rather sparsely pilose. Mandibles short, at apex sharply incurved. Mentum with short and wide, triangular tooth. Labium anteriorly concave. Maxillary palpus rather short, apex obliquely cut. Terminal segment of labial palpus very large, comparatively elongate. Antenna comparatively elongate, almost attaining base of pronotum. Median antennomeres slightly longer than wide, 3rd antennomere barely longer than 2/3 as long as 1st, c. 1.5 x as long as 2nd antennomere. Surface glossy, with traces of microreticulation only on clypeus. Puncturation sparse, very fine and superficial, distance between punctures about 5 x as wide as diameter of punctures. Pilosity sparse, elongate, hirsute, rather erect, inclined anteriorly. Both supraorbital setae elongate, perceptibly longer than pilosity, posterior supraorbital seta situated far behind eye at beginning of basal curvature.

Pronotum: Rather elongate, fairly cordiform, considerably longer than wide, distinctly wider than head, widest in anterior third. Upper surface markedly convex. Lateral margin strongly convex in anterior two thirds, sinuate in front of posterior angles. Apex fairly wide, rather excised, anterior angles obtuse, slightly pro-

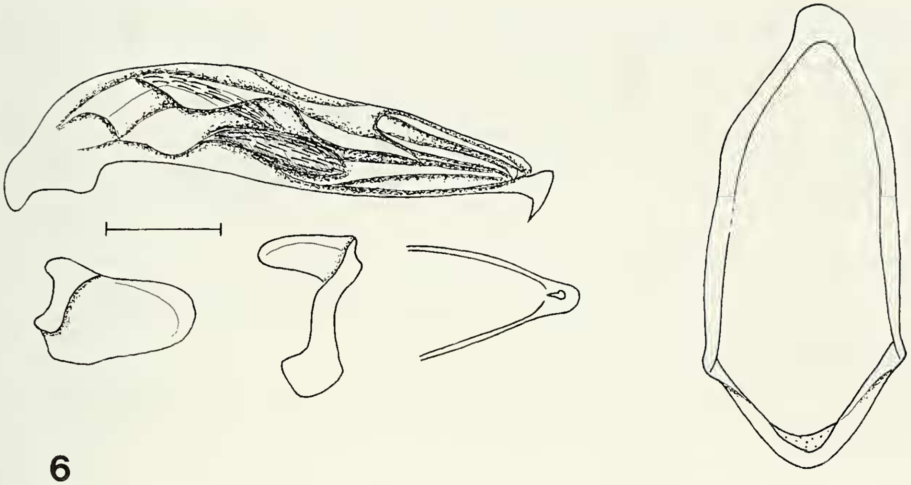

FIG. 6
Gunvorita hamifera sp. n. ♂ genitalia. For legend see fig. 2.

jecting. Base narrow, laterally oblique but not excised, posterior angles slightly projecting, obtuse. Lateral margin distinct though without distinct border line, marginal channel absent. Median line fine, barely impressed. Prebasal grooves almost absent. Anterior marginal seta elongate, situated at anterior third of pronotum, posterior seta shorter, situated right on basal angle. Surface without microreticulation, glossy, with fairly sparse and fine puncturation. Distance between punctures c. 2-3 x as wide as diameter of punctures. Pilosity moderately sparse, elongate, hirsute, irregularly inclined, though rather erect.

Elytra: Rather elongate, triangular, laterally slightly curved, widest in posterior third, upper surface depressed, in most specimens odd intervals in anterior half slightly raised. Shoulders narrow, oblique, not projecting. Apex wide, almost straight, transverse, not redressed to suture. Striae irregularly marked by rows of punctures, puncturation fairly dense, moderately coarse, rather irregular, in apical and lateral parts punctures somewhat rasp-like. Fixed setae in third interval hardly recognizable within the coarse puncturation. Series of marginal pores very difficult to detect when setae broken, apparently consisting of 8 basal, 3 postmedian, 6 apical pores, and 1 pore at apex of 3rd stria. Setae when present very elongate. Surface without microreticulation, glossy. Pilosity dense, rather elongate, hirsute, irregular, inclined posteriorly, fairly depressed.

Male genitalia: Genital ring moderately wide, ovalish, narrowed to apex, fairly symmetric. Aedeagus fairly elongate, with elongate, almost straight, barely upturned apical part that bears a large, very acute crotchet at the very tip. Apex moderately wide seen from below. Lower surface gently convex. Internal sac in middle with two large, somewhat coiled, strongly dentate sclerites, one situated at left side near bottom, the other running from top of right side anteriad to bottom. For parameres see fig. 6, right paramere rather elongate.

Female genitalia: Stylomere 2 narrow and elongate with acute apex, with 2 elongate ventral ensiform setae, one elongate dorsal ensiform seta, and a nematiform seta situated in a large groove in middle between base and apex. Apex of stylomere 1 medially with 1-2 nematiform setae.

Variation: Little variation noted apart from minor differences in relative shape of head, pronotum, and elytra.

Etymology: The name refers to the hamiform apex of the aedeagus.

Distribution: Eastern Nepal, known from a restricted area around type locality. Central Nepal.

Collecting circumstances: Collected by sieving ground litter in mixed broad-leaved forest, *Quercus* forest, and rich, mixed broad-leaved forest at rather high altitudes.

Gunvorita schawalleri sp. n. Figs 7, 29, 45, 61

Type material: Holotype: ♂, Nepal Expeditionen Jochen Martens, 412 Sankhua Sabha Distr., Arun Valley betw. Mure and Murure, mixed broad-leaved forest, 2050-2150 m, 9-17 June 88, J. Martens & W. Schawaller leg. (SMNS).

Paratypes: 6 ♂♂, same data (CBM, SMNS); 1 ♂, Nepal Expeditionen Jochen Martens, 414 Sankhua Sabha Distr., Arun Valley, Chichila, 1900-2000 m, Quercus forest, bushes near village, 10-20 June 88, J. Martens & W. Schawaller leg. (SMNS).

Diagnosis: Rather small species with rounded, not triangular head and small eyes, easily distinguished by the very short and compact aedeagus bearing a large crotchet immediately at apex.

DESCRIPTION:

Measurements: Length: 4.1-4.3 mm; width: 1.4-1.45 mm. Ratios. Length/width of head: 1.45-1.49; length orbit/eye: 3.77-3.85; length/width of pronotum: 1.18-1.22; width widest part/base of pronotum: 1.75-1.76; width pronotum/head: 1.05-1.11; length/width of elytra: 1.49-1.55; width elytra/pronotum: 1.90-1.96.

Colour: More or less dark piceous, suture of elytra narrowly reddish. Labrum, palpi, legs, and antennae reddish.

Head: Elongate, oval-shaped, posteriorly widened, though not triangular, widest in posterior third, orbit posteriorly widely rounded off, rather oblique. Upper surface gently convex. Eyes small, depressed, laterally little protruded, length slightly >1/4 of orbit length to beginning of curvature. Clypeus anteriorly slightly convex, surface in middle convex, uneven, lateral angles (above base of antenna) distinctly projecting. Clypeal seta far removed from apex, at apex on either side two hairs. Clypeal suture posterio-laterally with a large, deep groove each side. Frons convex, between eyes with a circular, slightly oblique groove on either side. Labrum anteriorly barely excised, 6-setose, inner 4 setae slightly shorter, lateral margin rather sparsely pilose. Mandibles short, at apex sharply incurved. Mentum with short and wide, triangular

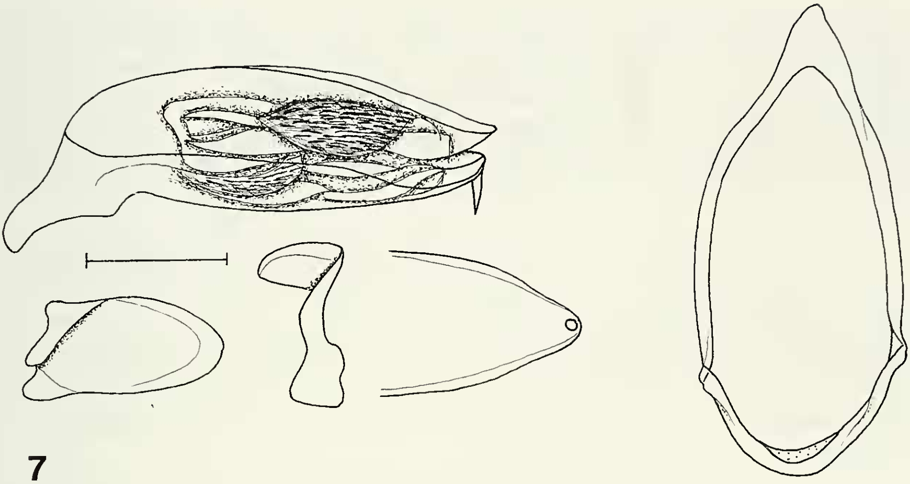

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Fig. 7
Gunvorita schawalleri sp. n. ♂ genitalia. For legend see fig. 2.

tooth. Labium anteriorly concave. Maxillary palpus rather short, apex obliquely cut. Terminal segment of labial palpus very large but comparatively short. Antenna rather short, attaining middle of pronotum. Median antennomeres as long as wide, 3rd antennomere <2/3 as long as 1st, <1.5 x as long as 2nd antennomere. Surface glossy, with traces of microreticulation only on clypeus. Puncturation sparse, very fine and superficial, distance between punctures about 4-5 x as wide as diameter of punctures. Pilosity sparse, elongate, hirsute, rather erect, inclined anteriorly. Both supraorbital setae elongate, perceptibly longer than pilosity, posterior supraorbital seta situated far behind eye at beginning of basal curvature.

Pronotum: Moderately elongate, fairly cordiform, considerably longer than wide, distinctly wider than head, widest in anterior third. Upper surface markedly convex. Lateral margin strongly convex in anterior two thirds, slightly sinuate in front of posterior angles. Apex fairly wide, slightly excised, anterior angles obtuse, slightly projecting. Base narrow, laterally oblique but not excised, posterior angles slightly projecting, obtuse. Lateral margin without distinct border line, marginal channel absent. Median line fine, not impressed. Prebasal grooves almost absent. Anterior marginal seta elongate, situated at anterior third of pronotum, posterior seta slightly shorter, situated right on basal angle. Surface without microreticulation, glossy, with rather sparse and fine puncturation. Distance between punctures c. 3 x as wide as diameter of punctures. Pilosity rather sparse, elongate, hirsute, irregularly inclined, though rather erect.

Elytra: Moderately elongate, triangular, laterally slightly curved, widest in posterior third, upper surface depressed, odd intervals in anterior half faintly raised. Shoulders comparatively wide, oblique, not projecting. Apex wide, almost straight, transverse, not redressed to suture. Striae irregularly marked by rows of punctures, puncturation fairly dense, rather coarse, rather irregular, in apical and lateral parts punctures somewhat rasp-like. Fixed setae in third interval hardly recognizable within the coarse puncturation. Series of marginal pores very difficult to detect when setae broken, apparently consisting of 8 basal, 3 postmedian, 6 apical pores, and 1 pore at apex of 3rd stria. Setae when present very elongate. Surface without microreticulation, glossy. Pilosity fairly dense, elongate, hirsute, irregular, inclined posteriorly, fairly depressed.

Male genitalia: Genital ring wide, ovalish, strongly narrowed to apex, rather symmetric. Aedeagus markedly short and compact, with short and wide, almost straight, slightly upturned apical part that bears a very large, acute crotchet at the very tip. Apex very wide seen from below. Lower surface gently convex. Internal sac in middle with two large, coiled, strongly dentate sclerites, one situated on left side near the top, the other near bottom on the right side. For parameres see fig. 7, left paramere rather elongate, right short.

Female genitalia: Unknown.

Variation: Little variation noted apart from minor differences in relative shape of head, pronotum, and elytra.

Etymology: The name is a patronym in honour of W. Schawaller.

Distribution: Eastern Nepal, known from a small area around type locality.

Collecting circumstances: Collected by sieving ground litter in mixed broad-leaved forest and *Quercus* forest at fairly high altitudes.

Gunvorita smetanai sp. n. Figs 8, 30, 46, 62

Type material: Holotype: ♂, Nepal (Pr. Bagmati) Pokhare NE Barahbise 2800 m, 2.V.81, I. Löbl & A. Smetana (MHNG).
Paratype: 1 ♂, same data (CBM).

Diagnosis: Large species with rounded, not triangular head, distinguished by shape of aedeagus with moderately elongate, markedly upturned apical part and a large crotchet situated far from apex.

DESCRIPTION:

Measurements: Length: 4.95-5.0 mm; width: 1.65 mm. Ratios. Length/width of head: 1.55-1.59; length orbit/eye: 3.55-3.57; length/width of pronotum: 1.21-1.27; width widest part/base of pronotum: 1.66-1.68; width pronotum/head: 1.15-1.18; length/width of elytra: 1.55-1.60; width elytra/pronotum: 2.05-2.06.

Colour: More or less dark piceous, suture of elytra narrowly reddish. Labrum, palpi, legs, and antennae yellowish.

Head: Elongate, oval-shaped, posteriorly widened, though not triangular, widest in posterior third, orbit posteriorly widely rounded off. Upper surface gently convex. Eyes small, depressed, length considerably >1/4 of orbit length to beginning of curvature. Clypeus anteriorly slightly convex, surface in middle convex, uneven, lateral

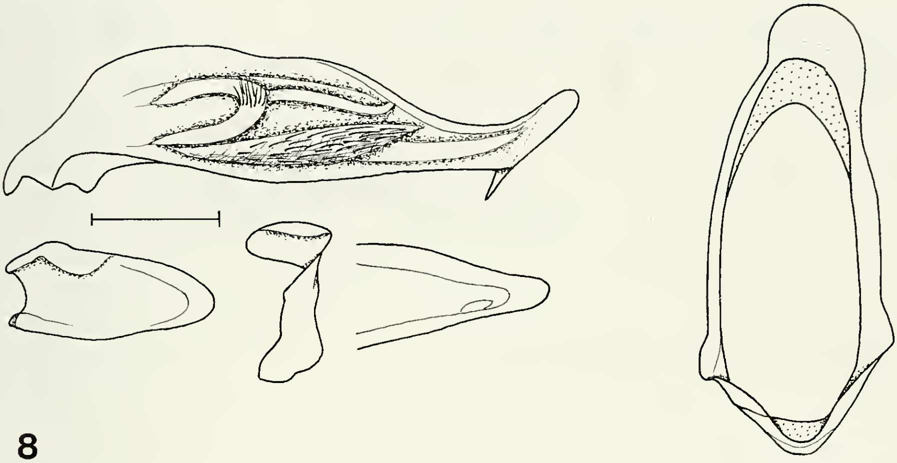

Fig. 8
Gunvorita smetanai sp. n. ♂ genitalia. For legend see fig. 2.

angles (above base of antenna) distinctly projecting. Clypeal seta far removed from apex, at apex on either side two hairs. Clypeal suture posterio-laterally with a large, deep groove each side. Frons convex, between eyes with a shallow, circular, slightly oblique groove on either side. Labrum anteriorly barely excised, 6-setose, inner 4 setae slightly shorter, lateral margin rather sparsely pilose. Mandibles short, at apex sharply incurved. Mentum with short and wide, triangular tooth. Labium anteriorly concave. Maxillary palpus rather short, apex obliquely cut. Terminal segment of labial palpus very large but comparatively short. Antenna comparatively elongate, reaching middle of pronotum. Median antennomeres slightly longer than wide, 3rd antennomere <2/3 as long as 1st, c. 1.5 x as long as 2nd antennomere. Surface glossy, with traces of microreticulation only on clypeus. Puncturation sparse, very fine and superficial, distance between punctures about 4-5 x as wide as diameter of punctures. Pilosity sparse, elongate, hirsute, erect, inclined anteriorly. Both supraorbital setae elongate, though not much longer than pilosity, posterior supraorbital seta situated far behind eye at beginning of basal curvature.

Pronotum: Rather elongate, fairly cordiform, considerably longer than wide, distinctly wider than head, widest in anterior third. Upper surface markedly convex. Lateral margin convex in anterior two thirds, sinuate in front of posterior angles. Apex fairly wide, slightly excised, anterior angles obtuse, slightly projecting. Base narrow, laterally oblique but not excised, basal angles slightly projecting, obtuse. Lateral margin rather inconspicuous, without distinct border line, marginal channel absent. Median line fine, not impressed. Prebasal grooves almost absent. Anterior marginal seta elongate, situated at anterior third of pronotum, posterior seta shorter, situated right on basal angle. Surface without microreticulation, glossy, with moderately sparse, fine punctuation. Distance between punctures c. 3-4 x as wide as diameter of punctures. Pilosity moderately sparse, elongate, hirsute, irregularly inclined, though rather erect.

Elytra: Rather elongate, triangular, laterally slightly curved, widest in posterior third, upper surface depressed, odd intervals in anterior half slightly raised. Shoulders narrow, oblique, not projecting. Apex wide, almost straight, slightly oblique, not redressed to suture. Striae irregularly marked by rows of punctures, puncturation fairly dense, rather coarse, rather irregular, in apical and lateral parts punctures finer and somewhat rasp-like. Fixed setae in third interval hardly recognizable within the coarse puncturation. Series of marginal pores very difficult to detect when setae broken, apparently consisting of 8 basal, 3 postmedian, 6 apical pores, and 1 pore at apex of 3rd stria. Setae very elongate. Surface without microreticulation, rather glossy. Pilosity dense, rather elongate, hirsute, irregular, inclined posteriorly, fairly depressed.

Male genitalia: Genital ring narrow, ovalish, with large apical plate, slightly asymmetric. Aedeagus rather short and stout, with stout, moderately elongate, markedly upturned apical part that bears a large crotchet far behind apex. Apex moderately wide seen from below. Lower surface gently convex. Internal sac in middle with large, coiled, strongly dentate sclerite. For parameres see fig. 8, left paramere rather elongate.

Female genitalia: Unknown.

Variation: Due to small number of available specimens, little variation noted.

Etymology: The name is a patronym of Dr A. Smetana, collector of this species.

Distribution: Central Nepal. Known only from type locality.

Collecting circumstances: Collected by sieving of leaf litter at rather high altitudes.

Gunvorita uncinata sp. n. Figs 9, 31, 47, 63

Type material: Holotype: ♂, Nepal Expeditionen Jochen Martens, 352 Taplejung Distr. above Yamputhin, left bank of Kabeli Khola, bushes, open forest, 1800-2000 m, 27-29 Apr 1988, J. Martens & W. Schawaller leg. (SMNS).

Paratype: 1 ♂, Nepal Expeditionen Jochen Martens, 351 Taplejung Distr., Yamputhin, cultural land, open forest, 1650-1800 m, 26 Apr.-1 May 1988, J. Martens & W. Schawaller leg. (CBM).

Diagnosis: Medium sized to fairly large species with rounded, not triangular head and rather small eyes, distinguished by the rather elongate aedeagus with elongate, somewhat spoon-shaped apical part that bears a small crotchet far removed from apex.

DESCRIPTION:

Measurements: Length: 4.5-4.7 mm; width: 1.55-1.6 mm. Ratios. Length/width of head: 1.50-1.53 length orbit/eye: 3.38-3.43; length/width of pronotum:

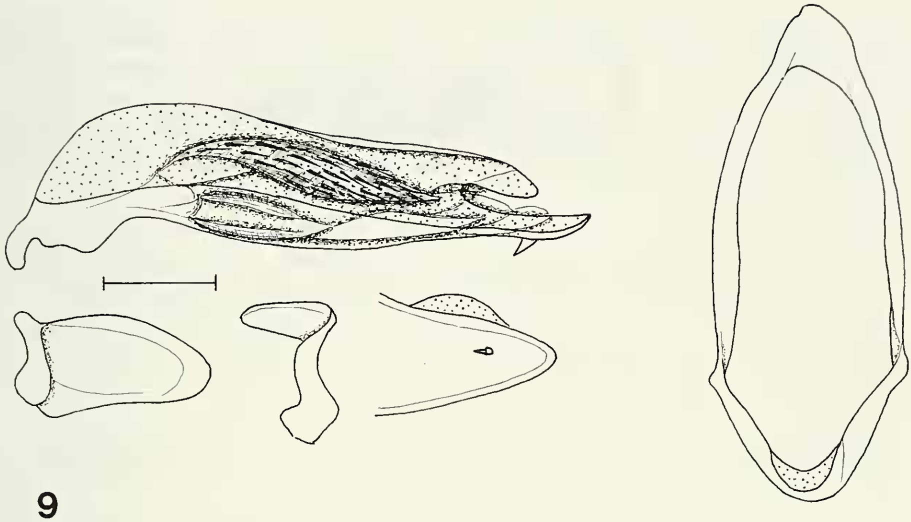

FIG. 9

Gunvorita uncinata sp. n. ♂ genitalia. For legend see fig. 2.

1.16-1.19; width widest part/base of pronotum: 1.68-1.73; width pronotum/head: 1.16-1.18; length/width of elytra: 1.51-1.52; width elytra/pronotum: 1.82-1.88.

Colour: Rather dark piceous, suture of elytra narrowly reddish. Labrum, palpi, legs, and antennae light reddish.

Head: Elongate, oval-shaped, posteriorly widened, though not triangular, widest in posterior third, orbit posteriorly widely rounded off. Upper surface gently convex. Eyes rather small, slightly convex, somewhat protruded laterally, length slightly <1/3 of orbit length to beginning of curvature. Clypeus anteriorly slightly convex, surface in middle convex, uneven, lateral angles (above base of antenna) distinctly projecting. Clypeal seta far removed from apex, at apex on either side two hairs. Clypeal suture posterio-laterally with a large, deep groove each side. Frons convex, between eyes with a deep, circular, slightly oblique groove on either side. Labrum anteriorly barely excised, 6-setose, inner 4 setae slightly shorter, lateral margin rather sparsely pilose. Mandibles short, at apex sharply incurved. Mentum with short and wide, triangular tooth. Labium anteriorly concave. Maxillary palpus rather short, apex obliquely cut. Terminal segment of labial palpus very large but comparatively elongate. Antenna comparatively short, barely surpassing middle of pronotum. Median antennomeres c. as long as wide, 3rd antennomere <2/3 as long as 1st, c. 1.5 x as long as 2nd antennomere. Surface glossy, with traces of microreticulation only on clypeus. Punctuation sparse, very fine and superficial, distance between punctures about 4 x as wide as diameter of punctures. Pilosity sparse, elongate, hirsute, rather erect, inclined anteriorly. Both supraorbital setae elongate, perceptibly longer than pilosity, posterior supraorbital seta situated far behind eye at beginning of basal curvature.

Pronotum: Comparatively short, rather cordiform, perceptibly longer than wide, distinctly wider than head, widest in anterior third. Upper surface markedly convex. Lateral margin strongly convex in anterior two thirds, sinuate in front of posterior angles. Apex wide, considerably excised, anterior angles obtuse, slightly projecting. Base rather narrow, laterally oblique but not excised, posterior angles barely projecting, obtuse, prebasal part of lateral margin almost parallel. Lateral margin rather inconspicuous, without distinct border line, marginal channel absent. Median line fine, not impressed. Prebasal grooves almost absent. Anterior marginal seta elongate, situated at anterior third of pronotum, posterior seta slightly shorter, situated right on basal angle. Surface without microreticulation, glossy, with moderately dense, fairly coarse puncturation. Distance between punctures c. 1-2 x as wide as diameter of punctures. Pilosity moderately dense, elongate, hirsute, irregularly inclined, though rather erect.

Elytra: Moderately elongate, triangular, laterally slightly curved, widest in posterior third, upper surface depressed, odd intervals in anterior half slightly raised. Shoulders fairly narrow, oblique, not projecting. Apex wide, almost straight, transverse, not redressed to suture. Striae irregularly marked by rows of punctures, puncturation fairly dense, coarse, rather irregular, in apical and lateral parts punctures somewhat rasp-like. Fixed setae in third interval hardly recognizable within the coarse puncturation. Series of marginal pores very difficult to detect when setae broken, apparently consisting of 8 basal, 3 postmedian, 6 apical pores, and 1 pore at apex of 3rd stria. Setae very elongate. Surface without microreticulation,glossy. Pilosita dense, rather elongate, hirsute, irregular, inclined posteriorly, fairly depressed.

Male genitalia: Genital ring moderately wide, rather parallel, narrowed to apex, rather symmetric, basal part elongate. Aedeagus fairly elongate, with elongate, almost straight, barely upturned apical part that bears a medium-sized crotchet far removed from the tip. Apex rather wide though tapering seen from below. Lower surface gently bisinuate. Internal sac in middle with elongate, coiled, strongly dentate sclerite. For parameres see fig. 9, both parameres rather elongate.

Female genitalia: Unknown.

Variation: Little variation noted apart from minor differences in relative shape of head, pronotum, and elytra.

Etymology: The name refers to the uncinate apex of the aedeagus.

Distribution: Eastern Nepal, known from a small area around type locality.

Collecting circumstances: Collected by sieving ground litter in bushes and open forest, partly on cultivated land, at median to fairly high altitudes.

Gunvorita besucheti sp. n. Figs 10, 19, 32, 48, 64

Type material: Holotype: ♂, India W. Bengal, Darjeeling dist. Algarah 1800 m. 8.X.78, C. Besuchet & I. Löbl (MHNG).

Paratypes: 2 ♀♀, same data (CBM, MHNG); 1 ♂, India W. Bengal, Darjeeling dist. Algarah-Labha 1900 m. 11.X.78, C. Besuchet & I. Löbl (MHNG).

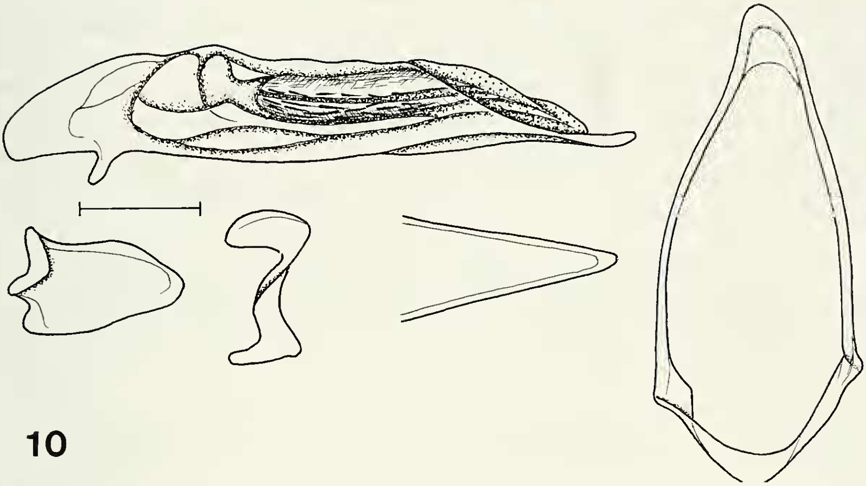

Fig. 10
Gunvorita besucheti sp. n. ♂ genitalia. For legend see fig. 2.

Diagnosis: Large species with posteriorly rather pentagonal head, further distinguished by shape of the very elongate aedeagus with slightly upturned apical part and without a crotchet.

DESCRIPTION:

Measurements: Length: 4.8-5.3 mm; width: 1.55-1.65 mm. Ratios. Length/width of head: 1.58-1.70; length orbit/eye: 3.11-3.25; length/width of pronotum: 1.27-1.35; width widest part/base of pronotum: 1.63-1.70; width pronotum/head: 1.11-1.18; length/width of elytra: 1.53-1.60; width elytra/pronotum: 2.02-2.10.

Colour: Dark piceous to almost blackish, suture of elytra narrowly reddish. Labrum, palpi, legs, and antennae yellowish, basal antennomere and femora reddish.

Head: Elongate, oval-shaped, posteriorly markedly widened, rather distinctly pentagonal, widest in posterior third, orbit posteriorly rather oblique, rounded off. Upper surface gently convex. Eyes small, laterally slightly produced, length slightly <1/3 of orbit length to beginning of curvature. Clypeus anteriorly slightly convex, surface in middle convex, uneven, lateral angles (above base of antenna) distinctly projecting. Clypeal seta far removed from apex, at apex on either side two hairs. Clypeal suture posterio-laterally with a large, deep groove each side. Frons convex, between eyes with a rather shallow, circular to somwehat triangular, slightly oblique groove on either side. Labrum anteriorly barely excised, 6-setose, inner 4 setae slightly shorter, lateral margin rather sparsely pilose. Mandibles short, at apex sharply incurved. Mentum with short and wide, triangular tooth. Labium anteriorly concave. Maxillary palpus remarkably stout, widened to apex, apex very obliquely cut. Terminal segment of labial palpus large and very elongate. Antenna comparatively elongate, slightly surpassing middle of pronotum. Median antennomeres slightly longer than wide, 3rd antennomere barely more than half as long as 1st, barely longer than 2nd antennomere. Surface glossy, with traces of microreticulation only on clypeus. Puncturation very sparse especially on frons and vertex, very fine and superficial, distance between punctures about 4-5 x as wide as diameter of punctures, middle of frons and vertex almost impunctate. Pilosity sparse, elongate, hirsute, erect, inclined anteriorly. Both supraorbital setae very elongate, posterior supraorbital seta situated far behind eye at beginning of basal curvature.

Pronotum: Rather elongate, fairly cordiform, considerably longer than wide, distinctly wider than head, widest in anterior third. Upper surface markedly convex. Lateral margin convex in anterior two thirds, sinuate in front of posterior angles. Apex fairly wide, rather deeply excised, anterior angles obtuse, markedly projecting. Base narrow, laterally oblique but not excised, basal angles slightly projecting, obtuse, Lateral margin rather inconspicuous, without distinct border line, marginal channel absent. Median line fine, not impressed. Prebasal grooves almost absent. Anterior marginal seta elongate, situated at anterior third of pronotum, posterior seta slightly shorter, situated right on basal angle. Surface without microreticulation, glossy, with moderately sparse, rather coarse puncturation. Distance between punctures c. as wide as diameter of punctures, only near median line punctures somewhat finer and sparser. Pilosity moderately sparse, elongate, hirsute, irregularly inclined, though rather erect.

Elytra: Rather elongate, barely triangular, laterally weakly curved, widest in posterior third, upper surface depressed, odd intervals in middle slightly raised. Shoulders wide, oblique, not projecting. Apex wide, straight, slightly oblique, not redressed to suture. Striae irregularly marked by rows of punctures, puncturation sparse, remarkably irregular, in basal half coarse, becoming very fine and sparse behind middle. Fixed setae in third interval hardly recognizable within the coarse puncturation. Series of marginal pores very difficult to detect when setae broken, apparently consisting of 8 basal, 2 postmedian, 4-5 apical pores, and 1 pore at apex of 3rd stria. Setae very elongate. Surface without microreticulation, glossy. Pilosity rather sparse, elongate, hirsute, irregular, inclined posteriorly, though rather erect.

Male genitalia: Genital ring rather narrow, elongate, ovalish-triangular, with small, asymmetrically curved apical plate. Aedeagus very elongate, with small, gently upturned apex that lacks a crotchet. Apex narrow and acute seen from below. Lower surface gently bisinuate. Internal sac in middle with large, elongate, coiled, dentate sclerite. For parameres see fig. 10, both parameres rather short.

Female genitalia: Stylomere 2 narrow and elongate with narrow, acute apex, with 2 elongate ventral ensiform setae the lower one being much shorter, one elongate dorsal ensiform seta, and a nematiform seta situated in a large groove in middle between base and apex. Apex of stylomere 1 medially with 1 nematiform seta.

Variation. Some variation noted in relative width of head, prothorax, and elytra, and in distinctness of puncturation of surface of head.

Etymology: The name is a patronym of Dr C. Besuchet, collector of this species.

Distribution: Northeastern India, Darjeeling region. Known only from the Algarah area.

Collecting circumstances: Collected by sieving of leaf litter at median altitude.

Gunvorita minor sp. n. Figs 11, 33, 49, 65

Type material: Holotype: ♂, India Meghalaya, Khasi Hills 27.X.78 Mawsynram-Balal 1000 m, C. Besuchet & I. Löbl, 33B (MHNG).

Diagnosis: Rather small species with posteriorly widened though neither pentagonal nor triagonal head, further distinguished by shape of the elongate, at lower surface almost straight aedeagus with faintly upturned apex that lacks a crotchet.

DESCRIPTION:

Measurements: Length: 4.0 mm; width: 1.32 mm. Ratios. Length/width of head: 1.49; length orbit/eye: 2.63; length/width of pronotum: 1.38; width widest part/base of pronotum: 1.63; width pronotum/head: 1.06; length/width of elytra: 1.56; width elytra/pronotum: 1.97.

Colour: Piceous, head slightly darker than rest of surface. Labrum, palpi, legs, and antennae yellowish.

Head: Rather elongate, oval-shaped, posteriorly slightly widened, though neither triagonal nor pentagonal, widest in posterior third, orbit posteriorly widely rounded off. Upper surface gently convex. Eyes comparatively large, though rather depressed, length slightly <2/5 of orbit length to beginning of curvature. Clypeus anteriorly rather convex, surface in middle convex, uneven, lateral angles (above base of antenna) distinctly projecting. Clypeal seta far removed from apex, at apex on either side two hairs. Clypeal suture posterio-laterally with a large, deep groove each side. Frons convex, between eyes with a rather shallow, rather irregular, slightly oblique groove on either side. Labrum anteriorly barely excised, 6-setose, inner 4 setae slightly shorter, lateral margin rather sparsely pilose. Mandibles short, at apex sharply incurved. Mentum with short and wide, triangular tooth. Labium anteriorly concave. Maxillary palpus stout, apex obliquely cut. Terminal segment of labial palpus large and rather elongate. Antenna comparatively short, barely surpassing middle of pronotum. Median antennomeres c. as long as wide, 3rd antennomere slightly <2/3 as long as 1st, slightly >1.33 x as long as 2nd antennomere. Surface glossy, with traces of microreticulation only on clypeus. Puncturation very sparse especially on frons and vertex, moderately fine, distance between punctures c. 4-5 x as wide as diameter of punctures, laterally puncturation denser, distance slightly less. Pilosity sparse, elongate, hirsute, erect, inclined anteriorly. Both supraorbital setae very elongate, posterior supraorbital seta situated far behind eye behind beginning of basal curvature.

Pronotum: Fairly elongate, gently cordiform, considerably longer than wide, barely wider than head, widest in anterior third. Upper surface convex. Lateral margin convex in anterior two thirds, sinuate in front of posterior angles. Apex fairly wide, gently excised, anterior angles obtuse, slightly projecting. Base narrow, laterally

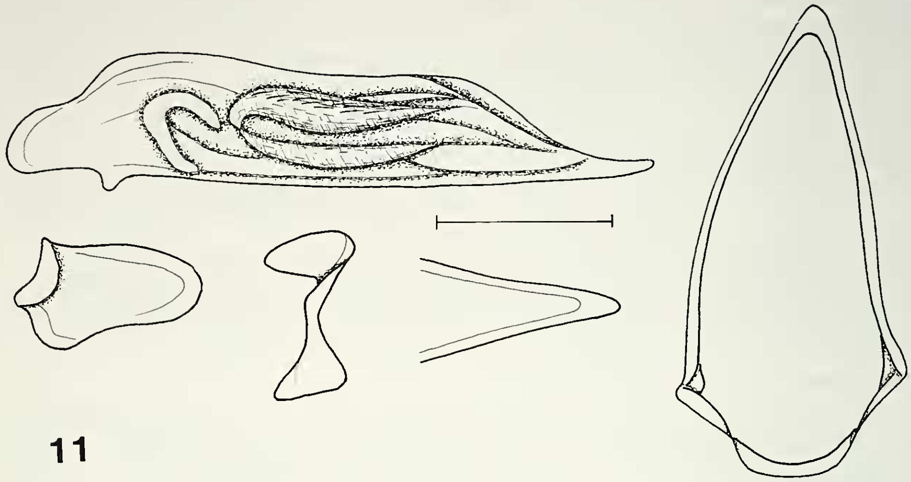

FIG. 11
Gunvorita minor sp. n. ♂ genitalia. For legend see fig. 2.

oblique but not excised, basal angles slightly projecting, obtuse. Lateral margin rather inconspicuous, slightly raised, marginal channel narrow, almost absent. Median line fine, not impressed. Prebasal grooves almost absent. Anterior marginal seta elongate, situated slightly behind anterior third of pronotum, both posterior setae broken, situated right on basal angles. Surface without microreticulation, glossy, with rather sparse, coarse puncturation. Distance between punctures slightly smaller than diameter of punctures. Pilosity rather sparse, moderately elongate, hirsute, irregularly inclined.

Elytra: Rather elongate, narrowly triangular, laterally weakly curved, widest in posterior third, upper surface fairly depressed. Shoulders rather wide, oblique, not projecting. Apex wide, straight, transverse, not redressed to suture. Striae irregularly marked by rows of punctures, puncturation rather sparse, coarse, becoming finer and sparser towards apex. Fixed setae in third interval hardly recognizable within the coarse puncturation. Series of marginal pores very difficult to detect when setae broken, apparently consisting of 8 basal, 2 postmedian, 5-6 apical pores, and 1 pore at apex of 3rd stria. Setae very elongate. Surface without microreticulation, glossy. Pilosity rather sparse, moderately elongate, hirsute, irregular, inclined posteriorly, rather depressed.

Male genitalia: Genital ring elongate, moderately wide, rather triangular, without distinct apical plate, gently asymmetric. Aedeagus elongate, with narrow, rather elongate, very faintly upturned apex that lacks a crotchet. Apex narrow and acute seen from below. Lower surface almost straight. Internal sac in middle with large, elongate, coiled, dentate sclerite. For parameres see fig. 11, both parameres rather short.

Female genitalia: Unknown.

Variation: Unknown.

Etymology: The name refers to the lesser size in comparison with the foregoing species from the same area.

Distribution: Northeastern India, Khasi Hills. Known only from type locality.

Collecting circumstances: Collected by sieving of leaf litter at median altitude.

Gunvorita punctipennis sp. n. Figs 12, 34, 50, 66

Type material: Holotype: ♂, Nepal Expeditionen Jochen Martens, 308 Ilam Distr., Sanishare 5 km N, feet of Siwalik Mts, 270-300 m, mixed Shorea forest, 3.-5. April 1988, J. Martens & W. Schawaller leg. (SMNS).

Diagnosis: Small species with rather triangular head, distinguished by elongate aedeagus with elongate, rather straight apical part without a crotchet, gently bisinuate lower surface, and slightly upturned apex.

DESCRIPTION:

Measurements: Length: 3.8 mm; width: 1.3 mm. Ratios. Length/width of head: 1.46; length orbit/eye: 2.64; length/width of pronotum: 1.23; width widest part/base of pronotum: 1.73; width pronotum/head: 1.13; length/width of elytra: 1.54; width elytra/pronotum: 1.94.

Colour: Rather dark piceous, pronotum and elytral faintly lighter, suture of elytra narrowly reddish. Labrum, palpi, legs, and antennae yellowish.

Head: Comparatively short, posteriorly widened, perceptibly triangular, widest in posterior quarter, orbit posteriorly very shortly and widely rounded off, rather straight. Upper surface gently convex. Eyes rather small, slightly convex, laterally slightly protruded, length slightly <2/5 of orbit length to beginning of curvature. Clypeus anteriorly slightly convex, surface in middle convex, uneven, lateral angles (above base of antenna) distinctly projecting. Clypeal seta far removed from apex, at apex on either side two hairs. Clypeal suture posterio-laterally with a large, deep groove each side. Frons convex, between eyes with a circular, slightly oblique groove on either side. Labrum anteriorly barely excised, 6-setose, inner 4 setae slightly shorter, lateral margin rather sparsely pilose. Mandibles short, at apex sharply incurved. Mentum with short and wide, triangular tooth. Labium anteriorly concave. Maxillary palpus rather short, apex obliquely cut. Terminal segment of labial palpus very large, fairly elongate. Antenna comparatively short, attaining middle of pronotum. Median antennomeres as long as wide, 3rd antennomere <2/3 as long as 1st, <1.5 x as long as 2nd antennomere. Surface glossy, with traces of microreticulation only on clypeus. Puncturation sparse, very fine and superficial, distance between punctures about 4-5 x as wide as diameter of punctures. Pilosity sparse, elongate, hirsute, rather erect, inclined anteriorly. Both supraorbital setae very elongate, much longer than pilosity, posterior supraorbital seta situated very far behind eye at beginning of basal curvature.

Pronotum: Moderately elongate, cordiform, considerably longer than wide, distinctly wider than head, widest in anterior third. Upper surface markedly convex.

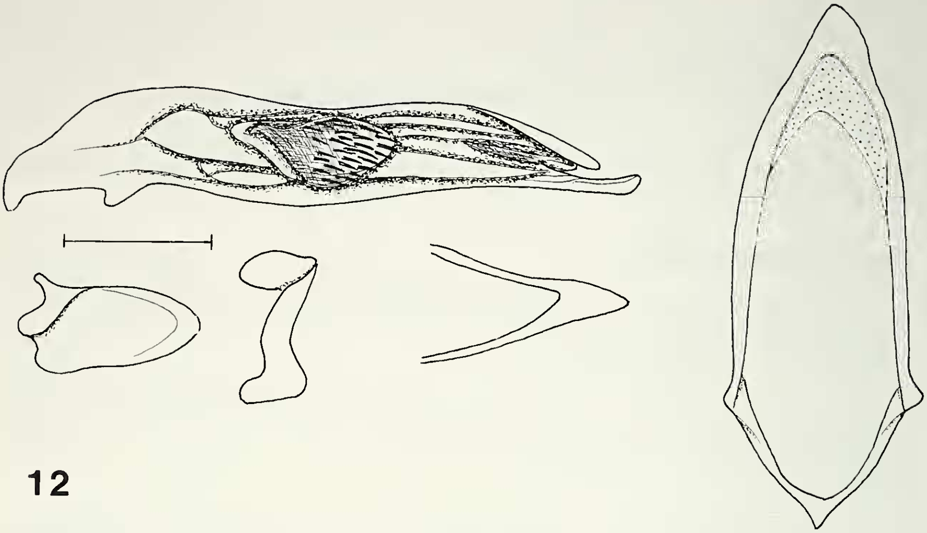

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Fig. 12
Gunvorita punctipennis sp. n. ♂ genitalia. For legend see fig. 2.

Lateral margin strongly convex in anterior two thirds, sinuate in front of posterior angles. Apex fairly wide, distinctly excised, anterior angles obtuse, slightly projecting. Base narrow, laterally oblique but not excised, posterior angles slightly projecting, obtuse. Lateral margin rather inconspicuous, without distinct border line, marginal channel absent. Median line fine, not impressed. Prebasal grooves almost absent. Anterior marginal seta situated at anterior third of pronotum, both setae broken, posterior seta rather short, situated right on basal angle. Surface without microreticulation, glossy, with moderately sparse, coarse, even somewhat vermiculose puncturation. Distance between punctures c. 1-2 x as wide as diameter of punctures. Pilosity rather sparse, elongate, hirsute, irregularly inclined, though rather erect.

Elytra: Rather elongate, triangular, laterally slightly curved, widest in posterior third, upper surface depressed, all intervals in anterior half rather distinctly raised. Shoulders comparatively wide, oblique, not projecting. Apex wide, almost straight, transverse, not redressed to suture. Striae irregularly marked by rows of punctures, puncturation fairly sparse, though very coarse, rather irregular, in apical and lateral parts punctures somewhat rasp-like. Fixed setae in third interval hardly recognizable within the coarse puncturation. Series of marginal pores very difficult to detect when setae broken, apparently consisting of 8 basal, 3 postmedian, 6 apical pores, and 1 pore at apex of 3rd stria. Setae very elongate. Surface without microreticulation, glossy. Pilosity moderately dense, rather elongate, hirsute, irregular, inclined posteriorly, fairly depressed.

Male genitalia: Genital ring narrow, elongate, fairly ovalish, narrowed to apex, rather symmetric, with elongate and apically acute basal part. Aedeagus elongate, with elongate, almost straight, faintly upturned apical part, without a crotchet at apex. Apex narrow and acute seen from below. Lower surface gently bisinuate. Internal sac in middle with large, though short, coiled, strongly dentate sclerite. For parameres see fig. 12, left paramere rather elongate, right paramere short.

Female genitalia: Unknown.

Variation: Unknown.

Etymology: The name refers to the markedly punctate elytra of this species.

Distribution: Eastern Nepal. Known only from type locality.

Collecting circumstances: Collected by sieving ground litter in *Shorea* forest of low altitude.

Gunvorita depressipennis sp. n. Figs 13, 20, 25, 51, 67

Type material: Holotype: ♂, India Meghalaya Khasi Hills Nongpoh 700 m. 5.XI.78 C. Besuchet & I. Löbl (MHNG).

Paratypes: 2 ♀♀, same data (CBM, MHNG).

Diagnosis: Medium-sized species with posteriorly widened though neither pentagonal nor triagonal head, further distinguished by shape of the fairly short, at lower surface markedly bisinuate aedeagus with distinctly downcurved apex that lacks a crotchet.

DESCRIPTION:

Measurements: Length: 4.5-4.6 mm; width: 1.45-1.55 mm. Ratios. Length/width of head: 1.49-1.54; length orbit/eye: 2.47-2.70; length/width of pronotum: 1.26-1.32; width widest part/base of pronotum: 1.56-1.60; width pronotum/head: 1.08-1.14; length/width of elytra: 1.49-1.56; width elytra/pronotum: 1.94-2.0.

Colour: Piceous, labrum, palpi, legs, and antennae yellowish.

Head: Elongate, oval-shaped, posteriorly slightly widened, though neither triagonal nor pentagonal, widest in posterior third, orbit posteriorly widely rounded off. Upper surface gently convex. Eyes comparatively large, though rather depressed, length slightly <2/5 of orbit length to beginning of curvature. Clypeus anteriorly rather convex, surface in middle convex, uneven, lateral angles (above base of antenna) distinctly projecting. Clypeal seta far removed from apex, at apex on either side two hairs. Clypeal suture posterio-laterally with a large, deep groove each side. Frons convex, between eyes with a rather shallow, rather irregular, slightly oblique groove on either side. Labrum anteriorly barely excised, 6-setose, inner 4 setae slightly shorter, lateral margin rather sparsely pilose. Mandibles short, at apex sharply incurved. Mentum with short and wide, triangular tooth. Labium anteriorly concave. Maxillary palpus fairly stout, apex obliquely cut. Terminal segment of labial palpus large and rather elongate. Antenna comparatively elongate, slightly surpassing middle of pronotum. Median antennomeres slightly longer than wide, 3rd antennomere c. 2/3 as long as 1st, slightly <1.5 x as long as 2nd antennomere. Surface glossy, with traces of micro-

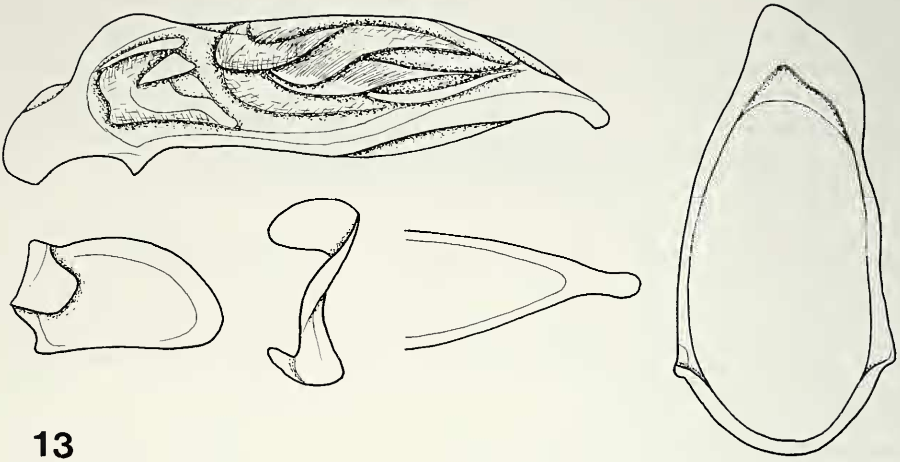

Fig. 13
Gunvorita depressipennis sp. n. ♂ genitalia. For legend see fig. 2.

reticulation only on clypeus. Puncturation very sparse especially on frons and vertex, moderately fine, distance between punctures c. 4 x as wide as diameter of punctures, laterally distance slightly less. Pilosity sparse, elongate, hirsute, erect, inclined anteriorly. Both supraorbital setae very elongate, posterior supraorbital seta situated far behind eye behind beginning of basal curvature.

Pronotum: Rather elongate, narrow, gently cordiform, considerably longer than wide, slightly wider than head, widest in anterior third. Upper surface moderately convex, basally highly convex. Lateral margin convex in anterior two thirds, sinuate in front of posterior angles. Apex fairly wide, rather deeply, v-shaped excised, anterior angles obtuse, markedly projecting. Base narrow, laterally oblique but not excised, basal angles slightly projecting, obtuse. Lateral margin rather conspicuous, slightly upturned, marginal channel narrow though marked. Median line fine, not impressed. Prebasal grooves almost absent. Anterior marginal seta elongate, situated at anterior third of pronotum, posterior seta slightly shorter, situated right on basal angle. Surface without microreticulation, glossy, with rather sparse, coarse puncturation. Distance between punctures considerably smaller than diameter of punctures. Pilosity rather sparse, moderately elongate, hirsute, irregularly inclined.

Elytra: Elongate, narrowly triangular, laterally weakly curved, widest in posterior fifth or quarter, upper surface markedly depressed. Shoulders wide, oblique, faintly projecting. Apex wide, straight, markedly oblique, distinctly redressed to suture. Striae irregularly marked by rows of punctures, puncturation sparse, in apical third irregular, very coarse, becoming finer and sparser behind middle. Fixed setae in third interval hardly recognizable within the coarse puncturation. Series of marginal pores very difficult to detect when setae broken, apparently consisting of 8 basal, 2 postmedian, 4 apical pores, and 1 pore at apex of 3rd stria. Setae very elongate. Surface without microreticulation, glossy. Pilosity rather sparse, moderately elongate, hirsute, irregular, inclined posteriorly, rather depressed.

Male genitalia: Genital ring moderately wide and elongate, ovalish, with large apical plate, gently asymmetric. Aedeagus rather short, with small, distinctly downcurved apex that lacks a crotchet. Apex rather narrow, slightly club-shaped seen from below. Lower surface markedly bisinuate. Internal sac in middle with large, elongate, coiled, dentate sclerite, in basal part with another, complexly folded, non-dentate sclerite. For parameres see fig. 13, both parameres rather short.

Female genitalia: Stylomere 2 narrow and elongate with acute apex, with 2 elongate ventral ensiform setae the lower one being much shorter, one elongate dorsal ensiform seta, and a nematiform seta situated in a large groove in apical two fifth. Apex of stylomere 1 medially apparently with 1 nematiform seta.

Variation: Little variation noted.

Etymology: The name refers to the depressed surface of elytra.

Distribution: Northeastern India, Khasi Hills. Known only from type locality.

Collecting circumstances: Collected by sieving of leaf litter at rather low altitude.

Gunvorita angusticeps sp. n. Figs 14, 36, 52, 68

Type material: Holotype: ♂, Nepal 426 Kaski Dist. above Pothana 2000 m, 27.-29.IV.1995, Martens & Schawaller (SMNS).

Diagnosis: Medium sized species with characteristic elongate, oval-shaped, not triangular head, further distinguished by very sparse pilosity on head and pronotum and by aedeagus with elongate, rather straight, apically wide apical part that does not bear a crotchet but is distinctly curved down.

DESCRIPTION:

Measurements: Length: 4.7 mm; width: 1.5 mm. Ratios. Length/width of head: 1.77; length orbit/eye: 3.78; length/width of pronotum: 1.38; width widest part/base of pronotum: 1.58; width pronotum/head: 1.09; length/width of elytra: 1.56; width elytra/pronotum: 2.10.

Colour: Rather dark piceous, suture of elytra narrowly reddish. Labrum, palpi, legs, and antennae light reddish.

Head: Very elongate, characteristically oval-shaped, posteriorly widened, widest in front of posterior third, orbit posteriorly very widely rounded off, very elongately oblique, by no means triangular. Upper surface gently convex. Eyes small, depressed, length slightly >1/4 of orbit length to beginning of curvature. Clypeus posteriorly markedly convex, surface in middle convex, uneven, lateral angles (above base of antenna) distinctly projecting. Clypeal seta far removed from apex, at apex on either side apparently a single hair. Clypeal suture posterio-laterally with a deep groove

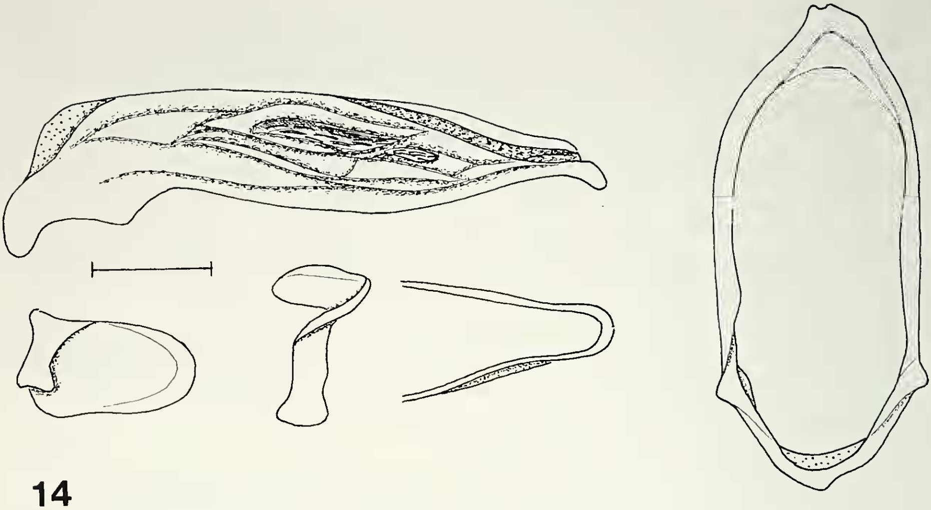

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Fig. 14
Gunvorita angusticeps sp. n. ♂ genitalia. For legend see fig. 2.

each side. Frons convex, between eyes with a circular, slightly oblique groove on either side. Labrum anteriorly slightly excised, 6-setose, inner 4 setae slightly shorter, lateral margin rather sparsely pilose. Mandibles short, at apex sharply incurved. Mentum with short and wide, triangular tooth. Labium anteriorly concave. Maxillary palpus rather short, apex obliquely cut. Terminal segment of labial palpus very large but comparatively short. Antenna comparatively short, barely attaining middle of pronotum. Median antennomeres as long as wide, 3rd antennomere <2/3 as long as 1st, <1.5 x as long as 2nd antennomere. Surface glossy, with traces of microreticulation only on clypeus. Puncturation extremely sparse and fine, superficial, distance between punctures about 6-8 x as wide as diameter of punctures. Pilosity very sparse, very elongate, hirsute, rather erect, inclined anteriorly. Both supraorbital setae elongate, though not much longer than pilosity, posterior supraorbital seta situated far behind eye at beginning of basal curvature, though due to elongate basal part of head far more anteriorly than in other species.

Pronotum: Elongate, narrow, less cordiform than in other species, considerably longer than wide, distinctly wider than head, widest in anterior third. Upper surface markedly convex. Lateral margin convex in anterior two thirds, sinuate in front of posterior angles. Apex fairly wide, slightly excised, anterior angles obtuse, slightly projecting. Base comparatively wide, laterally oblique but not excised, posterior angles slightly projecting, obtuse. Lateral margin rather inconspicuous, without distinct border line, marginal channel absent. Median line fine, not impressed. Prebasal grooves almost absent. Anterior marginal seta elongate, situated at anterior third of pronotum, posterior seta shorter, situated right on basal angle. Surface without microreticulation, glossy, with very sparse and fine puncturation. Distance between punctures c. 5-6 x as wide as diameter of punctures. Pilosity very sparse, elongate, hirsute, irregularly inclined, though rather erect.

Elytra: Rather elongate, triangular, laterally slightly curved, widest in posterior third, upper surface depressed, intervals barely raised. Shoulders comparatively wide, oblique, not projecting. Apex wide, almost straight, transverse, not redressed to suture. Striae irregularly marked by rows of punctures, puncturation rather sparse, coarse, rather irregular, in apical and lateral parts punctures somewhat rasp-like. Fixed setae in third interval hardly recognizable within the coarse puncturation. Series of marginal pores very difficult to detect when setae broken, apparently consisting of 8 basal, 3 postmedian, 6 apical pores, and 1 pore at apex of 3rd stria. Setae very elongate. Surface without microreticulation, rather glossy. Pilosity fairly sparse, elongate, hirsute, irregular, inclined posteriorly, fairly depressed.

Male genitalia: Genital ring wide, ovalish, slightly widened to apex, fairly symmetric. Aedeagus fairly elongate, with elongate, almost straight apical part that is distinctly downcurved though lacks an apical crotchet. Apex wide seen from below. Lower surface bisinuate. Internal sac in middle with elongate, coiled, strongly dentate sclerite. For parameres see fig. 14, left paramere fairly large and short, right paramere rather elongate.

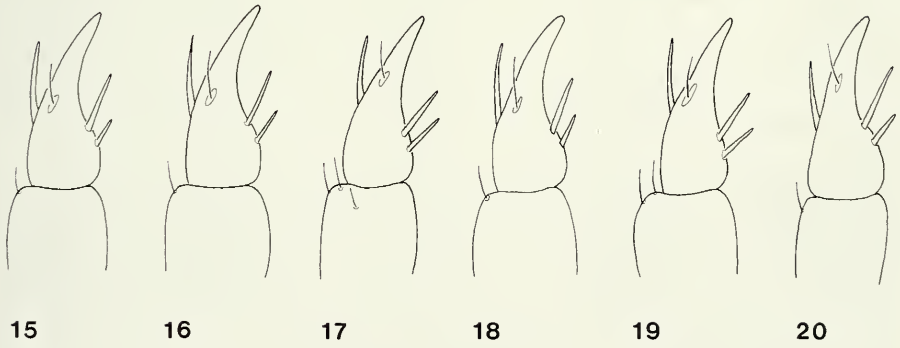
Female genitalia: Unknown.

Variation: Unknown.

Etymology: The name refers to the conspicuously narrow head of this species.

Distribution: Eastern Nepal. Known only from type locality.

Collecting circumstances: Collected by sieving ground litter in fairly high altitude.



Figs 15-20

♀ stylomere 2 and base of stylomere 1. 15. *Gunvorita laeviceps* sp. n.; 16. *G. inermis* sp. n. 17. *G. nepalensis* sp. n.; 18. *G. hamifera* sp. n.; 19. *G. besucheti* sp. n.; 20. *G. depressipennis* sp. n.

APPENDIX

Because measurements and rations are rather useful in species differentiation, the used ratios for all *Gunvorita* species are compiled in the following table.

Tab. 1

Measurements and ratios of the species of the genus *Gunvorita*. **L.** Length (in mm). **l/w h.** Length/width of head. **l o/e.** Length of orbit/eye. **l/w pr.** Length/width of pronotum. **w d/b.** Width widest diameter/base of pronotum. **w pr/h.** Width of pronotum/head. **l/w el.** Length/width of elytra. **w el/pr.** Width of elytra/pronotum. **HT.** Holotype.

Species	**L**	**l/w h**	**l o/e**	**l/w pr**
G. angusticeps	4.7	1.77	3.78	1.38
G. besucheti	4.8-5.3	1.58-1.70	3.11-3.25	1.27-1.35
G. depressipennis	4.5-4.6	1.49-1.54	2.47-2.70	1.26-1.32
G. elegans	4.25-4.45	1.35-1.36	2.97-3.02	1.16-1.17
G. hamifera	4.3-4.65	1.42-1.47	3.55-3.78	1.20-1.27
G. indica **HT**	5.65	1.78	3.93	1.23
G. inermis	3.6-3.9	1.44-1.47	3.05-3.20	1.24-1.28
G. laeviceps	4.0-4.25	1.42-1.45	2.98-3.20	1.23.1.27
G. martensi **HT**	4.2	1.53	3.67	1.29
G. minor	4.0	1.49	2.63	1.38
G. nepalensis	4.55-5.0	1.51-1.60	3.73-3.95	1.20-1.26
G. ovaliceps	5.05	1.61	3.87	1.31
G. punctipennis	3.8	1.46	2.64	1.23
G. schawalleri	4.1-4.3	1.45-1.49	3.77-3.85	1.18-1.22
G. smetanai	4.95-5.0	1.55-1.59	3.55-3.57	1.21-1.27
G. uncinata	4.5-4.7	1.50-1.53	3.38-3.43	1.16-1.19

	w d/b	**w pr/h**	**l/w el**	**w el/pr**
G. angusticeps	1.58	1.09	1.56	2.10
G. besucheti	1.63-1.70	1.11-1.18	1.53-1.60	2.02-2.10
G. depressipennis	1.56-1.60	1.08-1.14	1.49-1.56	1.94-2.00
G. elegans	1.76	1.10-1.11	1.46-1.48	1.91
G. hamifera	1.69-1.77	1.05-1.12	1.53-1.55	1.95-2.02
G. indica **HT**	1.78	1.25	1.54	2.02
G. inermis	1.71-1.76	1.05-1.11	1.52-1.56	1.93-2.02
G. laeviceps	1.70-1.81	1.10-1.15	1.50-1.51	2.05-2.08
G. martensi **HT**	1.74	1.09	1.51	2.05
G. minor	1.63	1.06	1.56	1.97
G. nepalensis	1.70-1.74	1.14-1.21	1.38-1.44	2.03-2.14
G. ovaliceps	1.75	1.14	1.59	1.94
G. punctipennis	1.73	1.13	1.54	1.94
G. schawalleri	1.75-1.76	1.05-1.11	1.49-1.55	1.90-1.96
G. smetanai	1.66-1.68	1.15-1.18	1.55-1.60	2.05-2.06
G. uncinata	1.68-1.73	1.16-1.18	1.51-1.52	1.82-1.88

Biogeographic remarks

Even when the actual distribution of the Oriental-Australian Leleupidiini is by no means adequately recorded, certain striking distribution patterns can be recognized: The genus *Gunvorita* is apparently confined to the pre-Himalayan areas of Nepal, Sikkim, and adjacent northern India; the genus *Paraleleupidia*, subgenus *Megaleleupidia* is indigenous to a rather restricted montane area in South India; and the genus *Colasidia* is distributed from Malaysia through Sumatra and northern Borneo to Papua New Guinea and northeastern Australia (Fig. 69, tab. 2). But this extensive range of the Oriental Leleupidiini is by no means continuous, though bears large and striking gaps, from where until now no records are available: Ceylon (Sri Lanka), central India, Burma, Thailand, Indochina, southern China, Java, the Indonesian part of Borneo, the Philippines, the Moluccas including Celebes (Sulawesi), and Western New Guinea (Irian Jaya). In some areas (e. g. southern Borneo, Java, western New Guinea) Leleupidiini do presumably occur and I think they will be detected when these areas are more appropriately sampled. In other countries, however, such as main parts of Burma, Thailand, Indochina, southern China, perhaps also the Philippines, Leleupidiini perhaps do not occur. The reason for this prediction is the supposed biogeographical history of the subfamily in the Oriental region.

TAB. 2

Current distribution of the Oriental-Australian Leleupidiini.

	Number of species		
Country	***Gunvorita***	***Colasidia***	***Paraleleupidia***
Nepal	10		
Sikkim	1		
Northeast India	8		
South India			3
Malaysia		8	
Sumatra		6	
Sarawak (northern Borneo)		7	
Sabah (northern Borneo)		5	
Borneo altogether (only northern part)		12	
Papua New Guinea		3	
Australia (northern Queensland)		1	
Total number of species	**16**	**30**	**3**

Leleupidiini occur outside of the Oriental-Australian regions only in central and eastern Africa (where they have been discovered and where they are still most numerous) and they are thus an Old World Tropical faunal element. At the first glance Leleupidiini could be supposed to belong to the so-called Old Gondwanan faunal element which was always adapted to subtropical to tropical conditions. Remnants of this element are still present in subtropical and tropical parts of South America, Africa, and Australia. But this faunal element is usually well represented in large parts of Australia, whereas Leleupidiini in Australia have a very restricted range in the northeast and presumably immigrated rather recently from the north, probably via New Guinea. Where, therefore, the Oriental-Australian Leleupidiini came from?

Apparently, the species of *Paraleleupidia* of southern India are more closely related to their African counterparts of the same genus, than to either the Asiatic *Gunvorita* or *Colasidia*. This may be evidence of their independent biogeographical history and of their different place of origin. The different biogeographical history, on the other hand, may explain the apparent gaps in the present distribution of Leleupidiini in the Oriental region.

For explanation of these questions a short summary of the present ideas about the geological history of the southern continents is required that refers mainly to RIDD (1968), MCKENNA (1973), SHIELDS (1979, 1983), POWELL *et al.* (1981), OWEN (1983), KEAST (1983), AUDLEY-CHARLES (1987), TRUSWELL *et al.* (1987), SCOTESE *et al.* (1988), VEEVERS *et al.* (1991), BURRETT *et al.* (1991), DALY *et al.* 1991, CRANSTON & NAUMAN (1991), and DE BOER (1995).

According to present knowledge the first breakup of the southern landmass (Gondwanaland) in a western and eastern part began in late Jurassic (c. 155 mio b.p.), when a deep sea trench formed between present South America + Africa in the west and present Antarctica + India + Australia in the east. This seaway which became later the Indian Ocean spread southwards and subsequently India began its northwards movement. At the same time separation of South America and Africa began from the north through development of a narrow seaway, the later South Atlantic, and subsequently Africa drifted likewise northwards under a certain amount of rotation. Also separation of Australia had commenced in the late Jurassic by the development of a deep seaway in a west to east direction between Antarctica and the western part of Australia. Complete segregation of Australia from Antarctica, however, occurred in early Tertiary, when the seaway between the Indian and Pacific Oceans was completed. Since its separation from Antarctica, Australia drifted steadily northwards, until it came in contact with the south Asiatic insular belt in mid Miocene (c. 15 mio b.p.).

There is some reason to believe that southern Asia (excluding India) is not a compact block but is composed from rather small components of different origin and geological history, because certain parts (terranes) of Gondwanaland that formerly had been located east of Africa drifted likewise northwards and eventually came in contact with the northern continent Laurasia or with those parts of it that now build central Asia. Especially the terranes of the so called "Sundaland" (present Malaysia, southern Thailand and Burma, and the Greater Sunda Islands, most probably even northeastern India and Nepal) were originally situated between later Africa and Australia and drifted away from Gondwanaland during late Jurassic or early Cretaceous. Unfortunately (see below) it is still unsettled, whether these terranes always formed a more or less continuous landmass, whether they were always separated and arrived at different times and in different places at the Laurasian continent. It is further unknown, to which extent they were submerged during their drifting history.

Certainly the mentioned terranes arrived at their present position prior to the time when Australia came in contact with southern Asia – this is likewise demonstrated by geological and biogeographical evidence. However, during late Tertiary as well as during most of Pleistocene Sundaland was more or less isolated from the mainland of Asia and this is true even for those components of Sundaland that are now part of the

Asian mainland, e.g. Malaysia, southwestern Thailand, and perhaps even northeastern India, Sikkim, and Nepal.

On the basis of the sketched geological and geographical evidence and of the present distribution scheme, the following scenario of the biogeographical history of the Oriental-Australian Leleupidiini is suggested: The Oriental Leleupidiini are not monophyletic, because at least the species of *Paraleleupidia* are more closely related to African Leleupidiini than to the remaining Oriental genera, and they arrived at their present position in the Oriental region by independent drift on the Indian plate. This would also explain the apparent distributional gap of Leleupidiini in central India.

The genus *Colasidia* apparently developed in that part of Gondwanaland that was originally located east of Africa, and later the original stock of *Colasidia* drifted on terranes of the later Sundaland to the north, to meet southern Asia where it subsequently diversified.

Unfortunately the phylogenetic relations of and within the genus *Colasidia* are still uncertain due to limited material and too little knowledge of the male genitalia, and to the lack of a general generic revision of the Leleupidiini as a whole (see BAEHR 1997b). However, in the following I dare a very preliminary attempt to fix the supposed plesiomorphic state for some external characters. Although this does not implicitly mean that apomorphic states could not have evolved convergently, there is some reason to believe that they are synapomorphic states so that the more derived species would build up a monophyletic group. I regard the following character states as plesiomorphic (mainly by outgroup comparison with other leleupidiine genera):

- large size
- rather elongate body shape
- triangular shape of elytra
- depressed dorsal surface
- fine and dense puncturation of surface
- dense and diffuse puncturation of elytra
- dense, hirsute pilosity
- large eyes
- rounded or ovalish head the posterior part of which is not strikingly widened
- elongate antenna
- simple male aedeagus without striking features at apex and within internal sac.

If these character polarizations are correct, then the most primitive members of the genus *Colasidia* have been thus far observed on the Malayan Peninsula (in particular *C. oviceps*, *C. depressa*, *C. rougemonti*, *C. lagadiga*, *C. malayica*, *C. triangularis*, and *C. attenuata* in about that sequence), but not elsewhere. Nevertheless, even on the Malayan Peninsula some rather advanced species exist. All species hitherto recorded from Borneo, New Guinea, and Australia, and most species from Sumatra, on the other hand, are in most respects apomorphic and perhaps form a monophyletic unit, and a single species from northernmost Sumatra only (*C. denticollis*) seems less advanced and occupies a somewhat intermediate position.

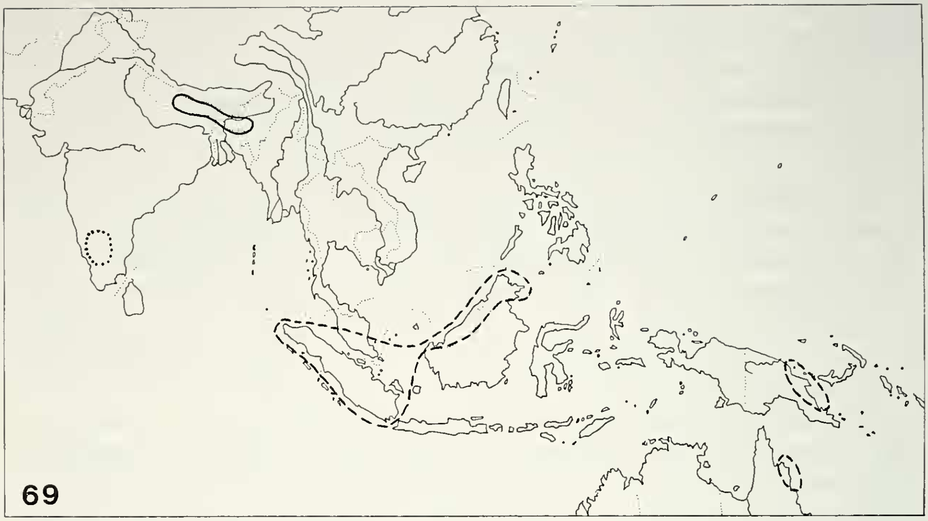


FIG. 69

Current distribution of the Oriental Leleupidiini. Genus *Colasidia*: – – – – – – ; genus *Gunvorita*: ———— ; genus *Paraleleupidia*: · · · · · · · .

Even if the opinion expressed by MORVAN (1994) that "there is no reason to divide the genus *Leleupidia*" – which means that *Coladisia* (and perhaps also *Gunvorita*) should be simply included in *Leleupidia* – should prove right for the presumably primitive stock of *Colasidia*, probably this does not apply to the group of advanced species mentioned above. Perhaps, this species-group could be simply separated from *Colasidia* to accomodate the mentioned relationships. However, this should be left to a future revisor who must have a reasonable knowledge of the African **and** Oriental Leleupidiini.

Contrary to the genus *Colasidia*, the genus *Gunvorita* forms a rather homogenous unit, likewise regarding external morphological characters as characters of the ♂ and ♀ genitalia. That is the reason why phylogenetic relations within the genus are not easily settled. Even when a character evolution comparable to that in *Colasidia* is postulated, the distribution of character states throughout the species is confusing.

To give an example: assumed that absence of the crotchet at the apex of the aedeagus, posteriorly rounded or ovalish head, and large eyes are plesiomorphic character states, these cannot be reasonably correlated, because of the five known species that lack the crotchet *angusticeps* has very small eyes, and *punctipennis* has a markedly triangular head. Hence, we must assume convergent origin in many of the characters mentioned, though without having any opportunity to decide between synapomorpy of characters or convergent origin.

This heterobathmic character distribution is evident also in several other character states. Hence, it is likewise impossible to correlate the phylogenetic relations of the species with their distribution pattern. Actually, although some apparently very

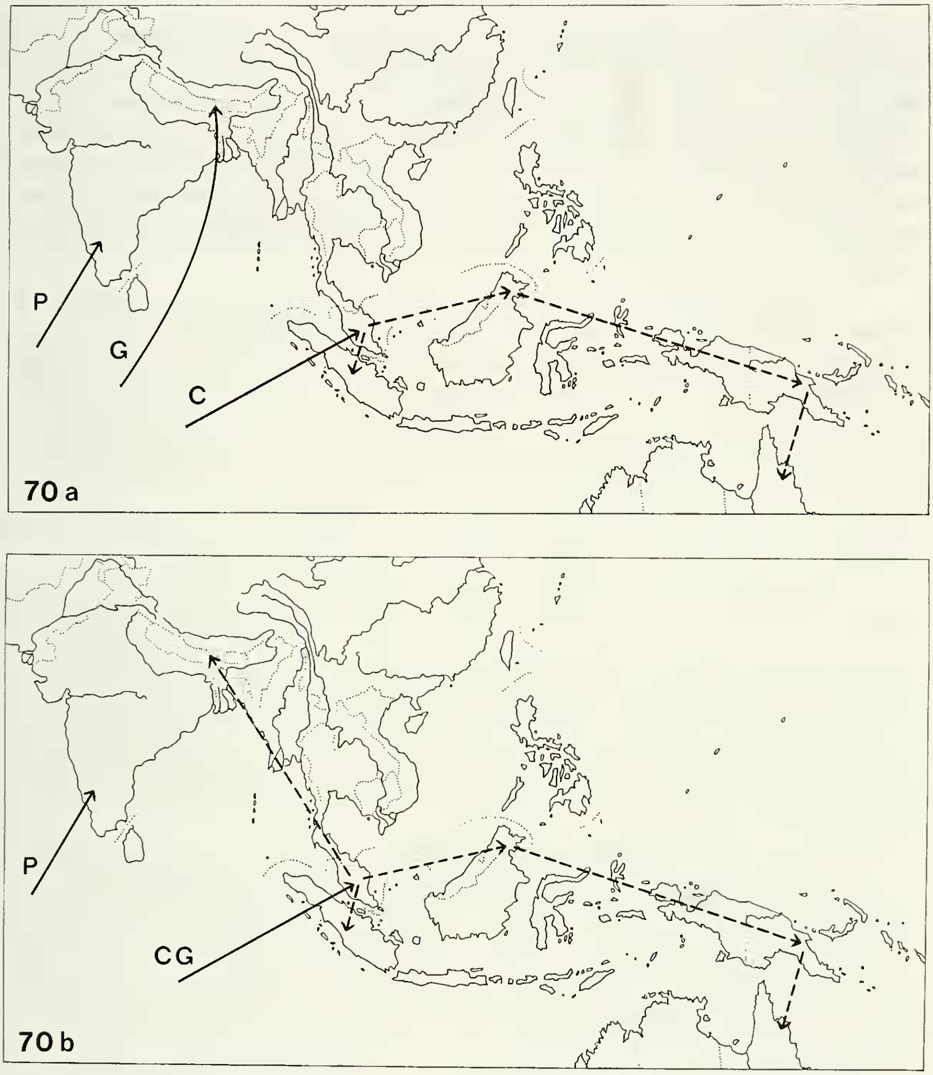


FIG 70. Supposed migration routes of the Oriental Leleupidiini. Different scenario's of the biogeographic history of genus *Gunvorita* are described in figs 70 a and b (see text). Immigration routes into the Oriental region: ———> ; migration routes within the Oriental and Australian regions: – – – – –> . Abbreviations: **C:** *Colasidia*; **G:** *Gunvorita*; **CG:** common ancestral stock of *Colasidia* + *Gunvorita*; **P:** *Paraleleupidia*.

closely related species possess adjacent or even overlapping ranges, other – likewise related – species may have quite different distributions. As a consequence, at present it is impossible to fix the most primitive species of *Gunvorita* and nothing can be said about evolution and historical biogeography within the genus.

Hennig (1966) expressed and Brundin (1966) firstly adopted the opinion that plesiomorphy of a taxon and place or origin are commonly correlated, and that the most apomorphic taxa are therefore usually found at the margins of the range of the supraspecific taxon, no difference whether speciation is believed to have been caused only by vicariance or also by some migration. If this opinion is true (and likely it is true at least for flightless, endogeous insects of low vagility as Leleupidiini are), then the genus *Colasidia* should have evolved on the northern part of the drifting Sundaland that firstly came into contact with the Asian mainland and which today forms the Malayan Peninsula.

Although this area reached the mainland first, members of the genus *Colasidia* apparently did not cross the western and northern boundaries of the former Sundaland, even though these northernmost parts where later firmly attached to the Asian mainland. Or, at least, if some did so, there are no remnants left in these areas, presumably caused by extinction. However, stocks of *Colasidia* did extend over the whole area of Sundaland (whether it was a continuous landmass or an insular belt), they diversified on Sumatra and Borneo, crossed the eastern boundaries of Sundaland and the Wallace line into the Australian region (and plate), and colonized New Guinea and northeastern Australia, where some taxonomic radiation occurred Baehr 1987, 1991, Darlington 1971).

Certainly, species of *Colasidia* and Leleupidiini in general ought to be very poor dispersers, because they are flightless – perhaps already since a long time – and because they live semi-endogeous. Then, why they where able to disperse so widely to the south and southeast in the course of which dispersal they certainly did some island hopping and crossed rather important waterbodies, but apparently were not able to cross the borders of the former Sundaland to the north and west to colonize the whole of tropical South Asia? Or. if they did so, why they were extinct in the northern part of its areal, but not in the southern part?

Unfortunately the phylogenetic relations of *Colasidia* and *Gunvorita* are still unsettled, although there is some reason to believe that *Gunvorita* in certain respects of external and genitalic morphology is more advanced than the apparently most primitive members of *Colasidia*, though less advanced than the highly evolved stock of *Colasidia* that ranges mainly over Sumatra, Borneo, and the Papuan-Australian region. With respect to the unsettled phylogenetic relations, therefore, two biogeographic scenario's are conceivable:

- either *Gunvorita* evolved independently from *Coladisia*, perhaps from a common ancestor, which implies that *Colasidia* is a monophyletic unit;
- or *Gunvorita* is more closely related to certain of the more advanced members of *Colasidia*, and then *Colasidia* would be paraphyletic.

In the first scenario *Gunvorita* and *Colasidia* could have reached their present ranges by independent drift on different terranes of the drifting Sundaland that attached separately and at different times to mainland Asia. If that would prove true, then colonization of the Oriental region by Leleupidiini occurred threefold and presumably also at three different times (Fig. 70a). This scenario would also explain the apparent gap between the present ranges of *Colasidia* and *Gunvorita* in Burma and western Thailand.

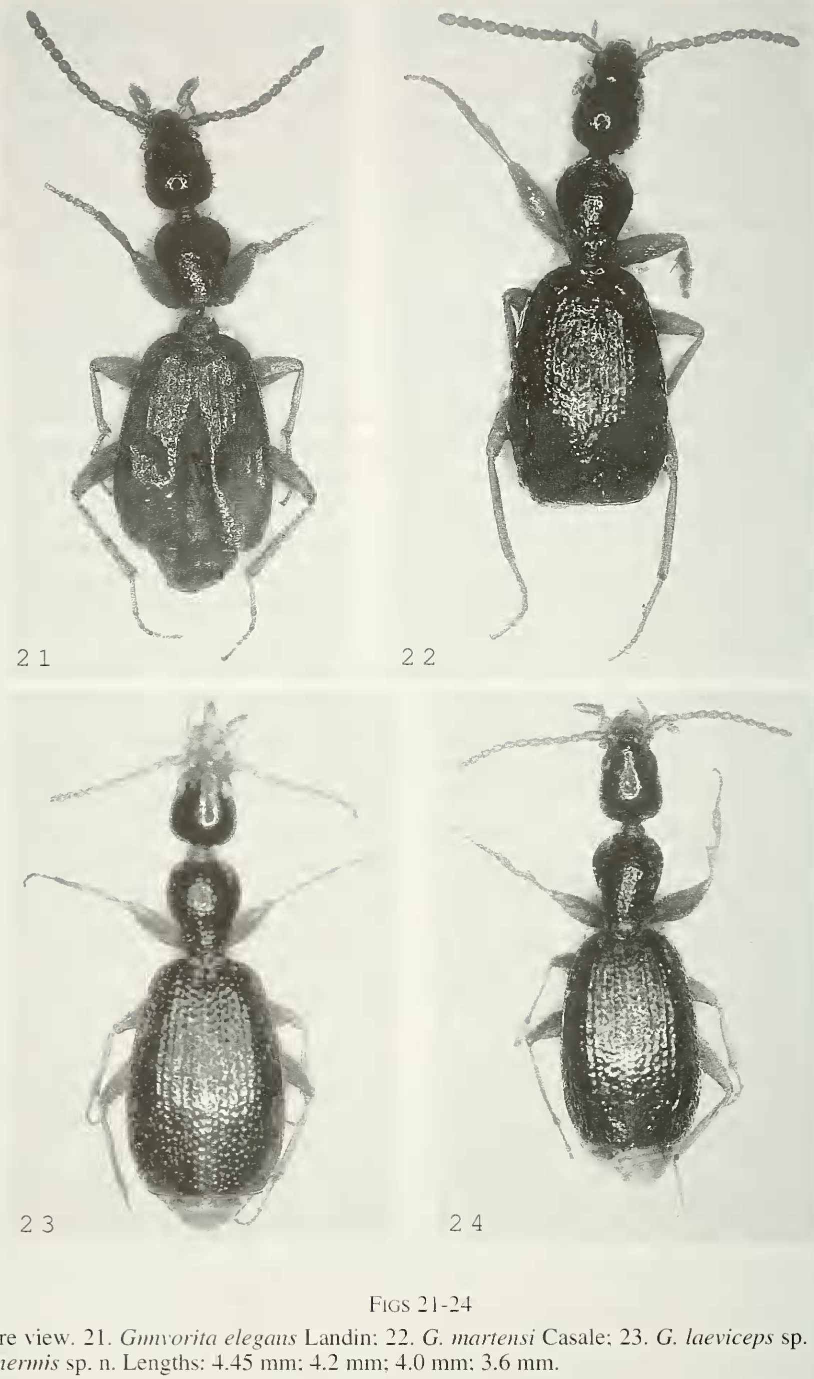
In the second scenario the common ancestor of *Colasidia* and *Gunvorita* arrived on the northernmost part of drifting Sundaland (present Malayan Peninsula) at its present position. After the fusion of this part with the Asian mainland some evolution took place and the ancestral stock of *Gunvorita* reached its present northern range by range spreading through Burma, but further evolution of *Gunvorita* likewise occurred in its present pre-Himalayan range (Fig. 70b). In this scenario, however, the apparent distribution gap between both genera can be only explained by extinction of the required intermediate Burmese populations – all under the provisio that the apparent distribution gap of Leleupidiini in Burma really exists and is not caused by unsatisfactory exploration.

Unfortunately, a final decision is not yet possible in view of the present unsufficient knowledge of geological history, phylogenetic relations, and chorology of the species. In both scenario's, however, New Guinea and Australia would have been colonized rather recently from the north, which implicates for Australia that old Gondwanan faunal elements in the Australian Region may have been indigenous for long periods (as most of those elements have been), but also may be very recent immigrants from the north.

In any case, Leleupidiini must be a very old group that evolved before the final breakup of the Gondwanan continent – at least before the final separation of Africa, India, and the terranes of "Sundaland". As a consequence, the origin of Leleupidiini should be pre-Cretaceous.

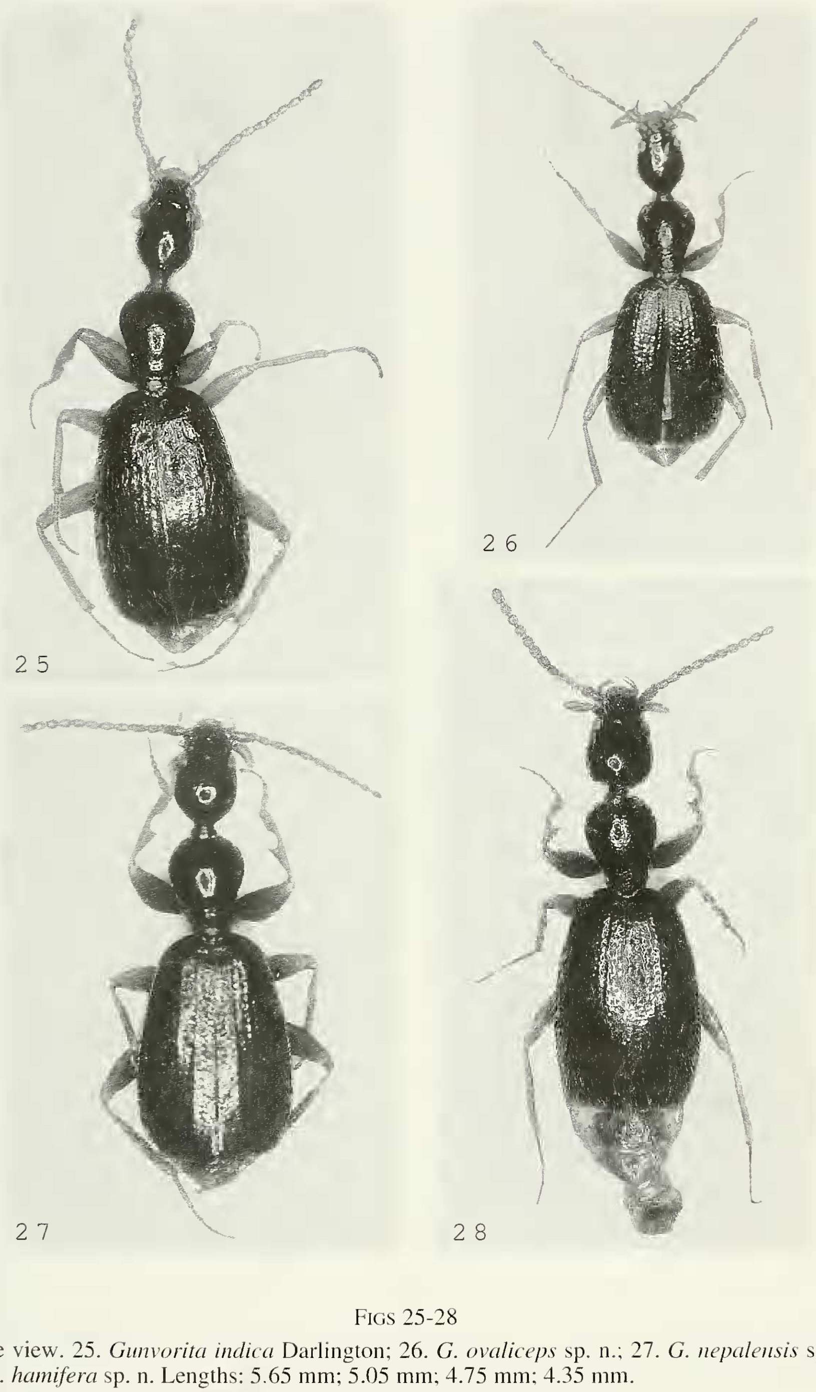
This general scenario proposed for Leleupidiini finds some support by a rather similar scenario of the biogeographical history in thegenus *Cryptocephalomorpha* of the carabid subfamily Pseudomorphinae (Baehr 1997). In this genus, the apparently most primitive species occurs in the northern part of South Africa (Natal), more advanced species live in Malaysia, southern Thailand, Sumatra and Java, and the most advanced species groups occur either on Borneo and the Philippines, either in New Guinea, New Britain, and northernmost Australia, respectively. Apparently this genus likewise originated in Africa, the original stocks of the Asian species presumably arrived drifting on terranes of "Sundaland", rather little evolved species persist in the area of former "Sundaland", and the most advanced species transgressed the boundaries of this area and colonized the Australian region (and plate), where today the most highly evolved species live. Similarly to the genus *Colasidia*, *Cryptocephalomorpha* did not spread much to the north and east on the Asian mainland, but on the mainland is restricted to the southern parts of Malaysia and Thailand. Therefore, in *Cryptocephalomorpha* presumably the same – still unknown – mechanisms prevented further spreading on the mainland as they did in *Colasidia*.

As a conclusion, the biogeographical pattern of drifting on terranes from the African component of Gondwanaland to mainland Asia, subsequent range spreading and evolution in the South Asian insular belt, and later colonization of the Australian region may prove to have been a regular and even fairly common event during the colonization of the Asian-Australian regions.



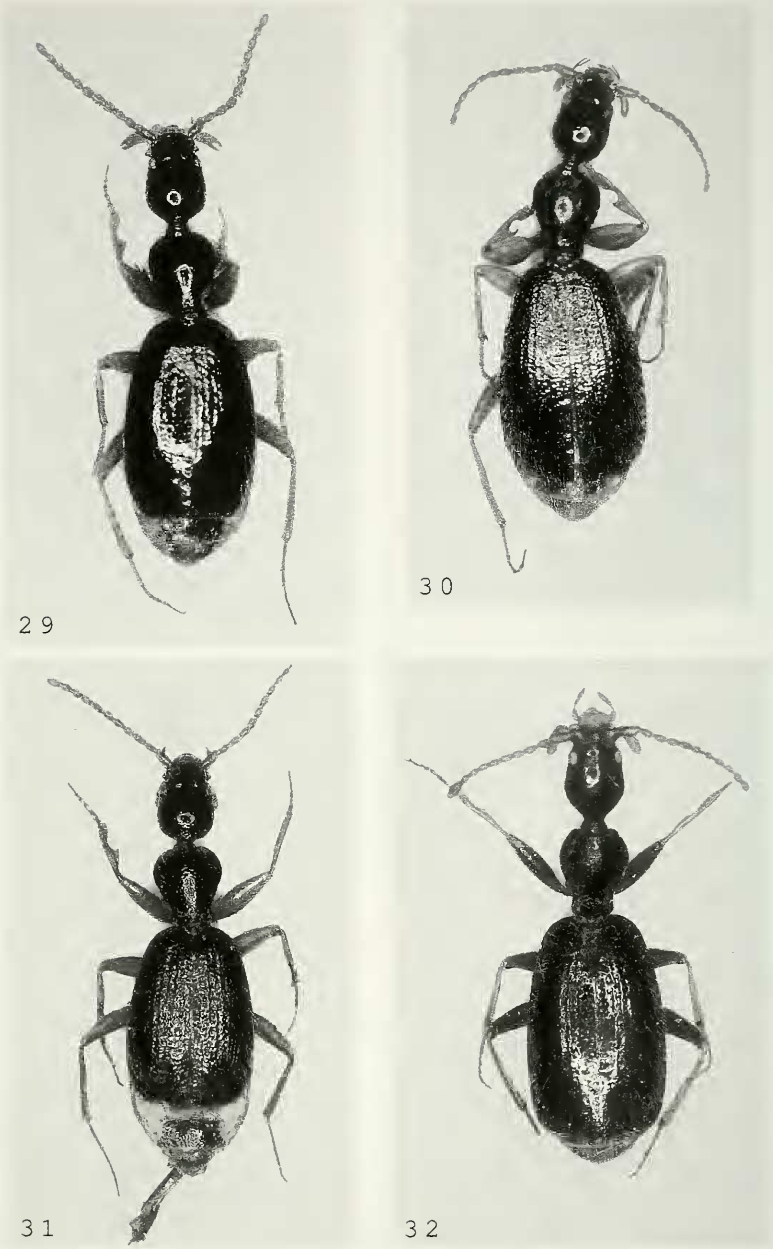
Figs 21-24

Entire view. 21. *Gunvorita elegans* Landin; 22. *G. martensi* Casale; 23. *G. laeviceps* sp. n.; 24. *G. inermis* sp. n. Lengths: 4.45 mm; 4.2 mm; 4.0 mm; 3.6 mm.



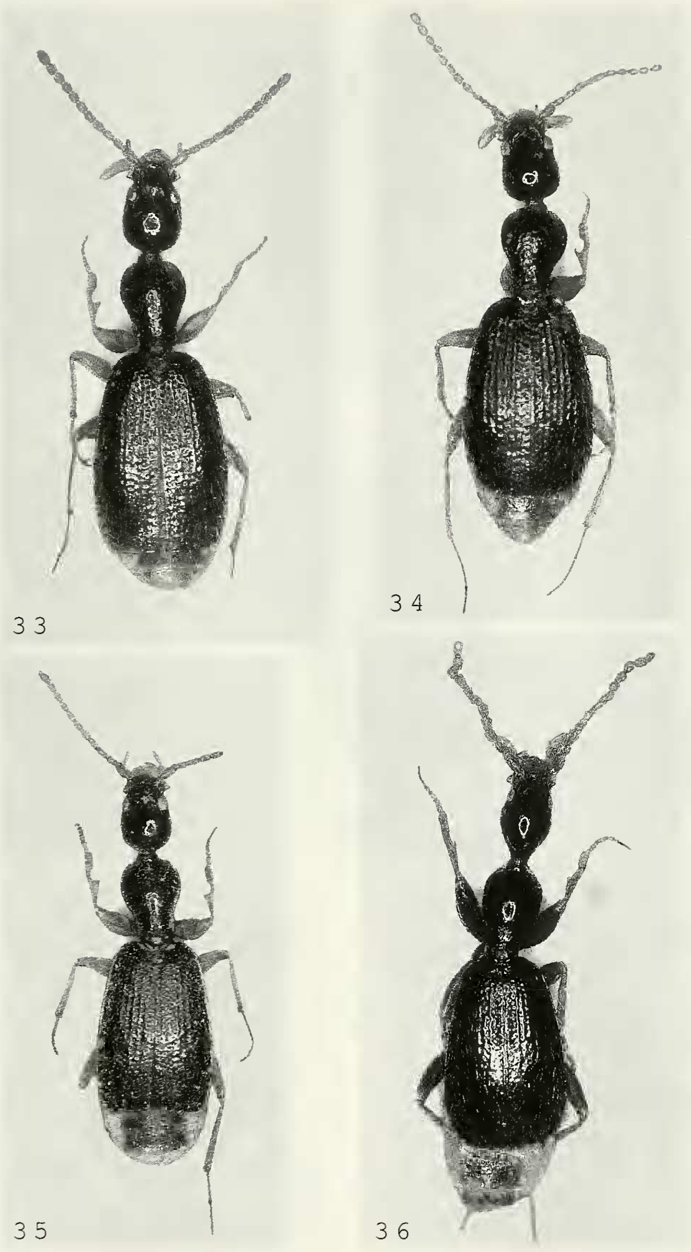
FIGS 25-28

Entire view. 25. *Gunvorita indica* Darlington; 26. *G. ovaliceps* sp. n.; 27. *G. nepalensis* sp. n.; 28. *G. hamifera* sp. n. Lengths: 5.65 mm; 5.05 mm; 4.75 mm; 4.35 mm.



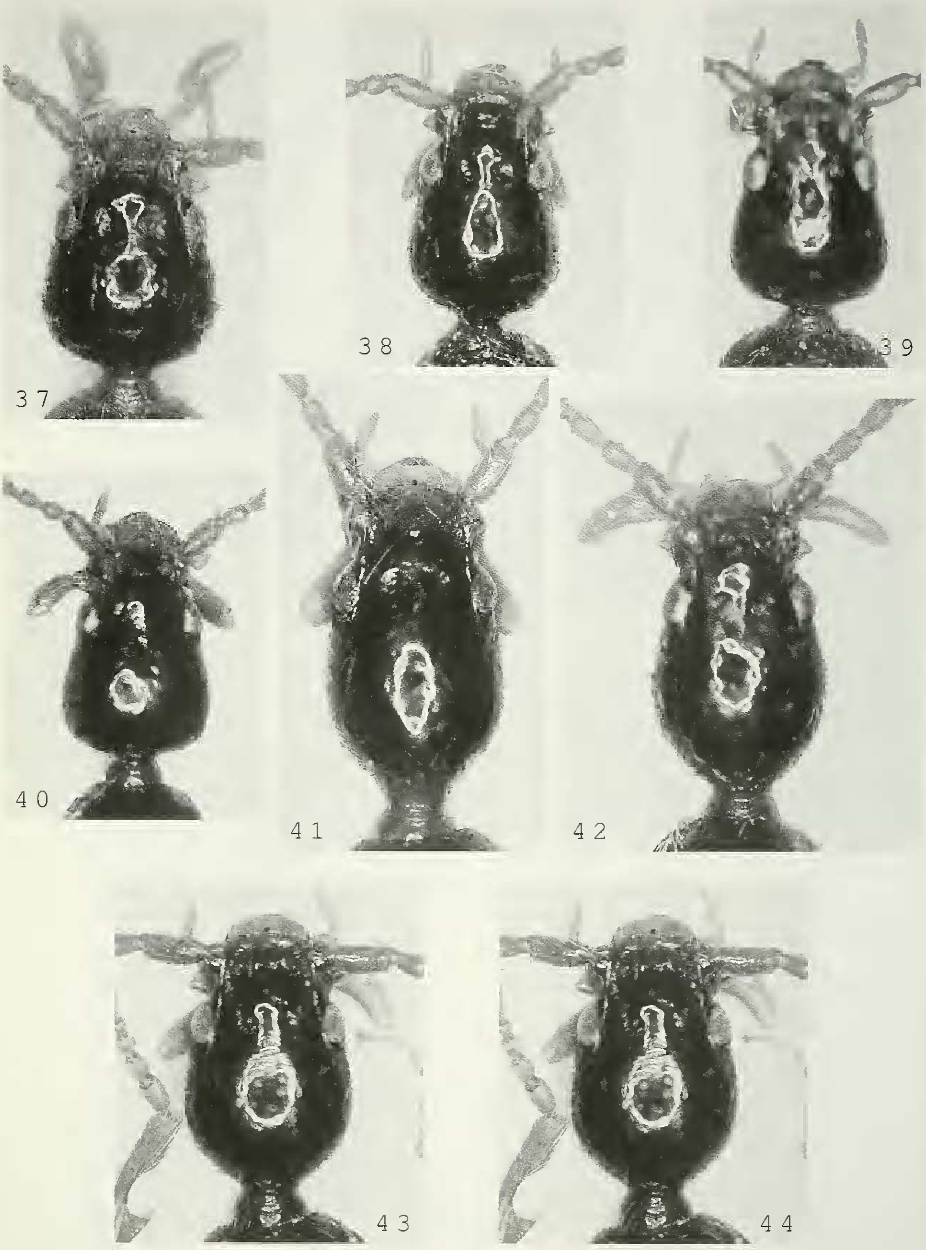
Figs 29-32

Entire view. 29. *Gunvorita schawalleri* sp. n.; 30. *G. smetanai* sp. n.; 31. *G. uncinata* sp. n.; 32. *G. besucheti* sp. n. Lengths: 4.15 mm; 4.95 mm; 4.5 mm; 4.8 mm.



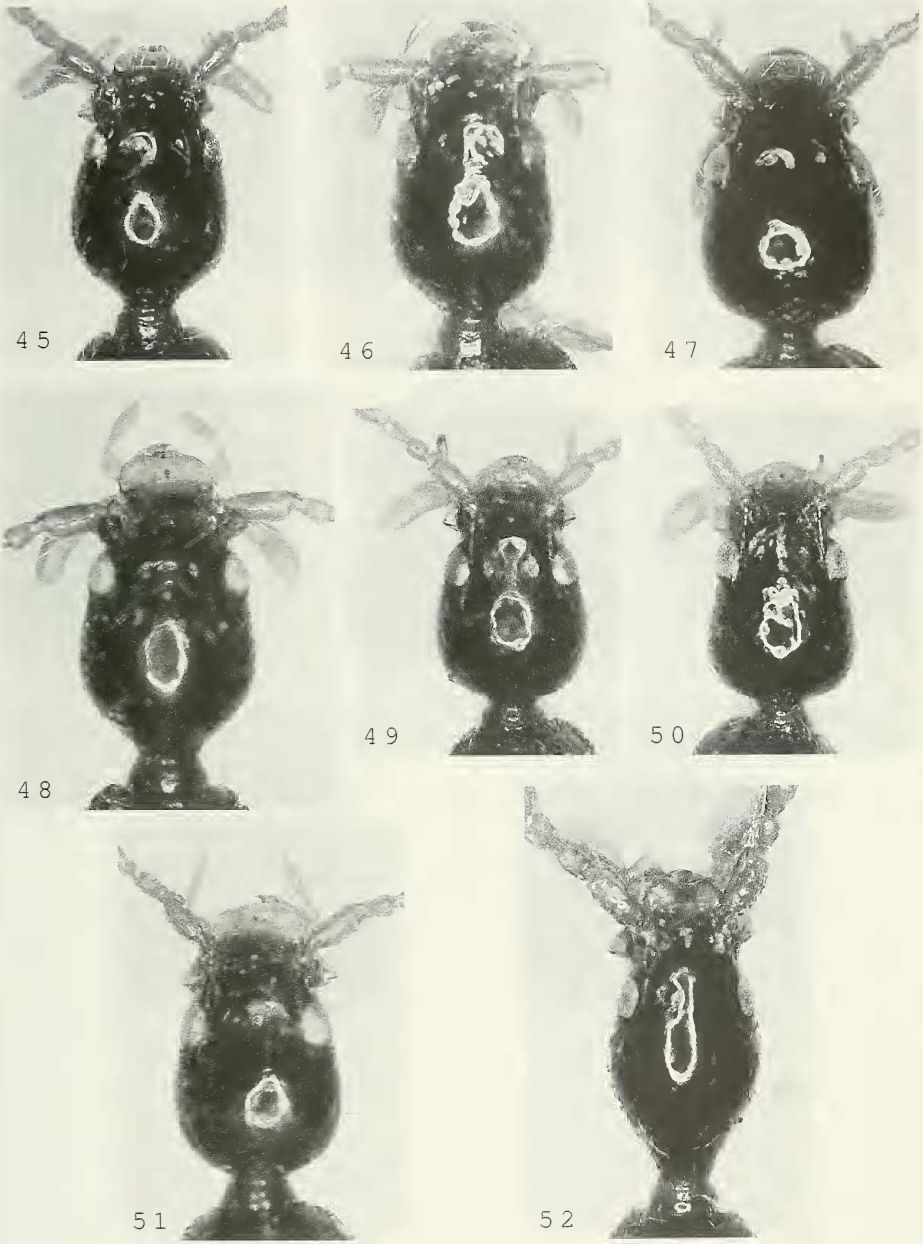
FIGS 33-36

Entire view. 33. *Gunvorita minor* sp. n.; 34. *G. punctipennis* sp. n.; 35. *G. depressipennis* sp. n.; 36. *G. angusticeps* sp. n. Lengths: 4.0 mm; 3.8 mm; 4.5 mm; 4.7 mm.



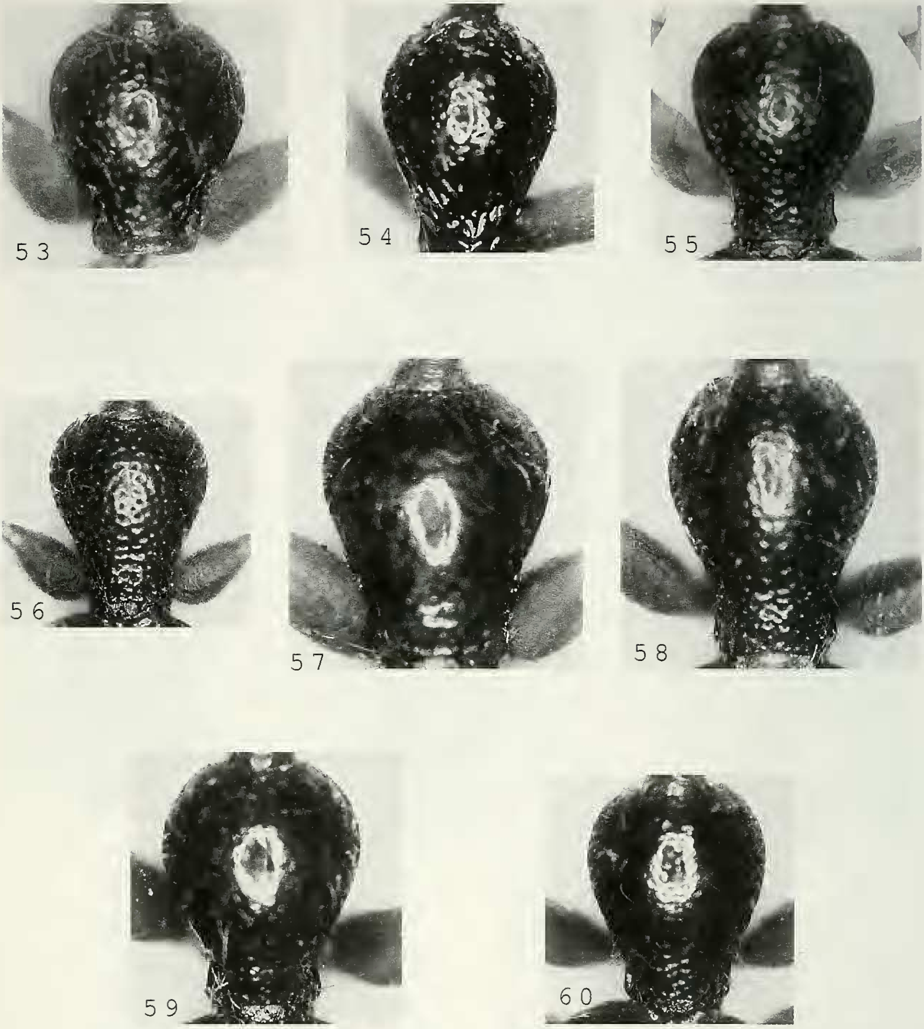
Figs 37-44

Head. 37. *Gunvorita elegans* Landin; 38. *G. martensi* Casale; 39. *G. laeviceps* sp. n.; *G. inermis* sp. n.; 41. *G. indica* Darlington; 42. *G. ovaliceps* sp. n.; 43. *G. nepalensis* sp. n.; 44. *G. hamifera* sp. n. All figures to scale.



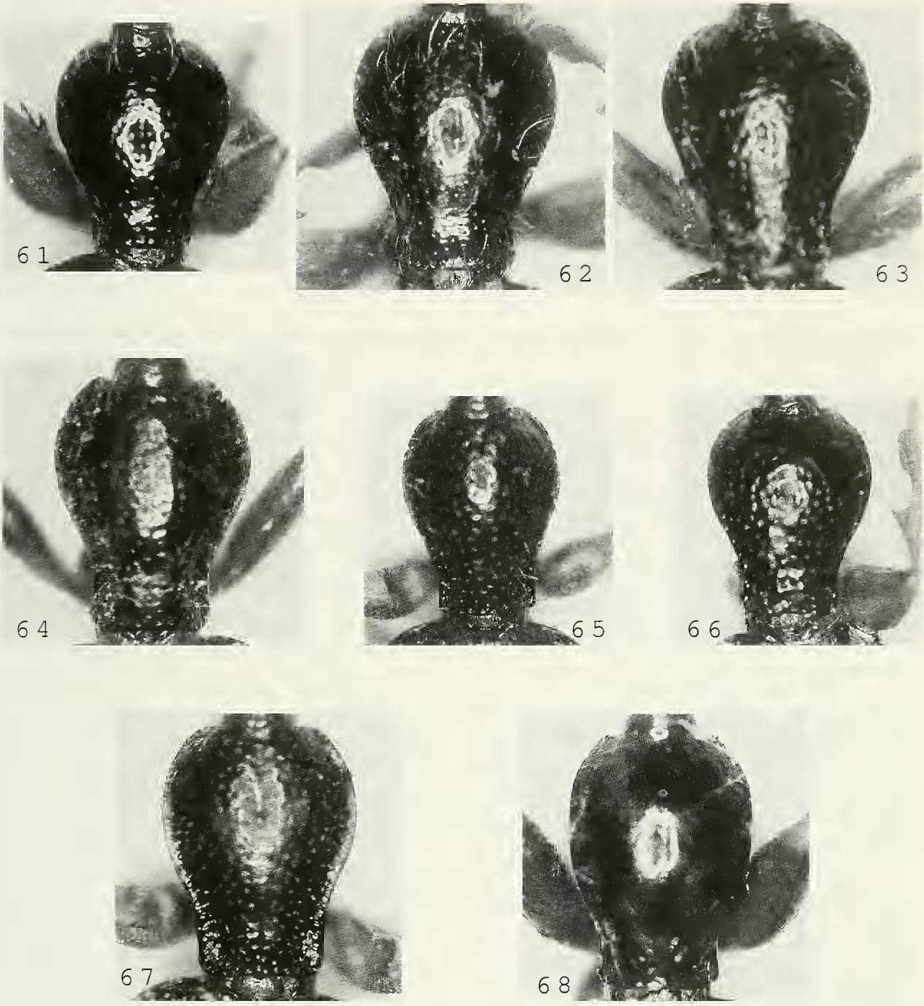
Figs 45-52

Head. 45. *Gunvorita schawalleri* sp. n.; 46. *G. smetanai* sp. n.; 47. *G. uncinata* sp. n.; 48. *G. besucheti* sp. n.; 49. *G. minor* sp. n.; 50. *G. punctipennis* sp. n.; 51. *G. depressipennis* sp. n.; 52. *G. angusticeps* sp. n. All figures to scale.



Figs 53-60

Prothorax. 53. *Gunvorita elegans* Landin; 54. *G. martensi* Casale; 55. *G. laeviceps* sp. n.; 56. *G. inermis* sp. n.; 57. *G. indica* Darlington; 58. *G. ovaliceps* sp. n.; 59. *G. nepalensis* sp. n.; 60. *G. hamifera* sp. n. All figures to scale.



FIGS 61-68

Prothorax. 61. *Gunvorita schawalleri* sp. n.; 62. *G. smetanai* sp. n.; 63. *G. uncinata* sp. n.; 64. *G. besucheti* sp. n.; 65. *G. minor* sp. n.; 66. *G. punctipennis* sp. n.; 67. *G. depressipennis* sp. n.; 68. *G. angusticeps* sp. n. All figures to scale.

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ALPHABETIC CHECKLIST OF THE LELEUPIDIINI FROM THE ORIENTAL AND AUSTRALIAN REGIONS

Colasidia angusticollis Baehr, 1988	Sarawak (Borneo)
Colasidia atra Baehr, 1997	Sarawak (Borneo)
Colasidia attenuata Baehr, 1997	Malaysia
Colasidia borneensis Baehr, 1997	Sabah (Borneo)
Colasidia brevicornis Baehr, 1988	Sarawak (Borneo)
Colasidia burckhardti Baehr, 1997	Sabah (Borneo)
Colasidia convexior Baehr, 1993	Sumatra
Colasidia denticollis Baehr, 1997	Sumatra
Colasidia depressa Berhr, 1997	Malaysia
Colasidia gerardi Perrault, 1982	Sabah (Borneo)
Colasidia globiceps Baehr, 1991	Sumatra
Colasidia helvetorum Baehr, 1997	Sumatra
Colasidia kokodae Baehr, 1991	Papua New Guinea
Colasidia lagadiga (Morvan, 1994)	Malaysia
Colasidia laticeps Baehr, 1997	Sabah (Borneo)
Colasidia loebli Baehr, 1997	Malaysia
Colasidia lustrans Baehr, 1991	Sumatra
Colasidia macrops Baehr, 1990	Sarawak (Borneo)
Colasidia madang Darlington, 1971	Papua New Guinea
Colasidia malayica Basilewsky, 1954	Malaysia
Colasidia mateui Baehr, 1997	Sabah (Borneo)
Coladisia monteithi Baehr, 1987	Queensland (Australia)
Colasidia oviceps Baehr, 1997	Malaysia
Colasidia papua Darlington, 1971	Papua New Guinea
Colasidia pumila Baehr, 1990	Sarawak (Borneo)
Colasidia riedeli Baehr 1990	Sarawak (Borneo)
Colasidia rougemonti (Morvan, 1994)	Malaysia
Colasidia similis Baehr 1997	Sumatra
Colasidia taylori Baehr 1988	Sarawak (Borneo)
Coladisia triangularis Baehr, 1997	Malaysia
Gunvorita angusticeps sp. n.	East Nepal
Gunvorita besucheti sp. n.	Northeast India
Gunvorita depressipennis sp. n.	Northeast India
Gunvorita elegans Landin, 1955	East Nepal, Sikkim, Northeast India
Gunvorita hamifera sp. n.	East Nepal
Gunvorita indica Darlington, 1971	Northeast India
Gunvorita inermis sp. n.	Northeast India
Gunvorita laeviceps sp. n.	Northeast India
Gunvorita martensi Casale, 1985	East Nepal
Gunvorita minor sp. n.	Northeast India

Gunvorita nepalensis sp. n.	Central Nepal
Gunvorita ovaliceps sp. n.	Northeast India
Gunvorita punctipennis sp. n.	East Nepal
Gunvorita schawalleri sp. n.	East Nepal
Gunvorita smetanai sp. n.	Central Nepal
Gunvorita uncinata sp. n.	East Nepal
Paraleleupidia besucheti Mateu, 1981	South India
Paraleleupidia linearis Baehr, 1990	South India
Paraleleupidia loebli Mateu, 1981	South India

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